South African Medical Journal : Suid-Afrikaanse Tydskrif vir Geneeskunde

Cape Town, 25 April 1959 Volume 33 No. 17 Deel 33 Kaapstad, 25 April 1959

General Practice Series

PSYCHOLOGICAL ASPECTS OF CONGENITAL HEART DISEASE*

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During the last few years, a great and sudden change in the prognosis of many congenital heart lesions has been brought about by dramatic advances in cardiac surgery. Children who were previously condemned to a limited life of invalidism can now often be restored to healthy activity and a normal life expectancy.

Now that satisfactory surgical techniques have been perfected it is most important that every possible care should be taken to ensure that the maximum advantage is derived from these operations. A new era has been opened in this field and, with the advance, certain problems for which there was previously no particular reason for concern have now to be faced. The excitement and drama have quite naturally been centred upon the activities in the operating theatre and there has been a tendency to overlook other aspects of the handling of these cardiac children.

There are several psychological considerations pertaining to the management of these patients which, though hitherto neglected, deserve most serious attention. Many of these problems arise during the years before the child is operated upon. Before discussing these, however, I propose to devote a little attention to the question of psychological handling at the time of operation.

AT THE TIME OF OPERATION

When a child with congenital heart disease is admitted to hospital for operation, the attention, thoughts and efforts of the surgeon are, of course, directed to the nature of the cardiac lesion and to the necessary steps towards its surgical repair. Unless the surgeon and his team have become psychologically orientated, there is a tendency to diagnose and treat the anatomical defect without giving adequate regard to the child's intellectual, emotional and personality structure. Such an approach fails to recognize the importance of treating a cardiac child as a total individual. The mere act of hospitalization, the surgical assault, the post-operative pain and discomfort, and the sudden removal of parental love and care, together constitute a psychological trauma of considerable magnitude. If this fact is not given the attention it deserves, the fundamentally important emotional security of the child is threatened and this, I venture to suggest, will interfere with satisfactory post-operative progress.

A few months ago, I had the opportunity of observing the methods employed at the cardiac surgery unit in the Mayo Clinic in Minnesota, USA, under the leadership of John Kirklin. Kirklin is acutely aware of the importance of a correct psychological approach in the handling of his surgical patients. He obviously considers this approach to be an essential part of surgical management and insists on its thorough application. In dealing with this aspect of congenital heart disease, I can do no better than describe my personal experience of Kirklin's routine:

Before the child's admission to hospital, Kirklin makes a point of establishing a friendly and reassuring relationship with the child. Before discussing the operation with the patient, he ascertains from the parents what they have already done towards preparing the child psychologically for the ordeal that lies ahead. He then proceeds to tell the patient all about the operation. The exact form which this discussion takes will depend upon the age of the patient, and other circumstances, but subterfuge is always avoided. The surgeon explains that there is something wrong that needs to be put right by an operation which will make the patient perfectly normal like all other children. The child is reassured concerning his parents' presence in the hospital throughout the operation and afterwards. The method and purpose of anaesthesia is carefully explained. Post-operative conditions are then outlined. He is warned to expect a few days of pain and discomfort, but is reassured of the minor severity of the ordeal. The necessity for post-operative restriction of food and fluid by mouth is explained and this leads on to the story of intravenous feeding. The child is warned about his wound, the stitches and drainage tubes. The purpose of an oxygen tent is explained and, in these modern times, it is usefully compared with the interior of a space ship. Kirklin has the ability to make the child feel that he is in for some great adventure, rather than an ordeal of which to be afraid. He is most sympathetic in his manner and concludes by inviting the child to ask questions on any points that he may or may not have raised.

Having done his utmost to reassure the child by eliminating as far as possible elements of mystery and fear, he then gives his attention to the parents. They, too, are reassured and invited to ask questions. If the patient is to be brought into hospital on the evening before the operation, the parents are requested to remain with him until he is asleep. The following morning, they must be with the child during the half-hour period before his removal from the ward to the operating theatre. After the operation, as soon as the patient has been bedded and has regained consciousness, the parents are instructed to come to the bedside. It is considered most important to reassure the child that his parents have not abandoned him at this crucial stage. Visits to the bedside are curtailed to about 5 minutes but are repeated regularly once an hour for at least 48 hours. Once the child has survived this critical post-operative period and is making satisfactory progress, visiting continues on a more casual and less frequent basis.

During the first week or two after operation, these patients suffer a good deal of pain and discomfort. Not unreasonably,

* Based on a paper read at a meeting of the Cape Town Subgroup of the South African Paediatric Association, 3 February 1959.

they sometimes develop intense feelings of resentment towards the parents for having landed them in this predicament. Parents are warned of the possibility of this emotional reaction and are so enabled to cope with it, with a minimum of alarm and anxiety.

Kirklin's psychological approach, based on common sense, is simple and easily applied. At the same time, it is positive and well directed. Surely its value is beyond dispute.

THE YEARS BEFORE OPERATION

The cardiac lesion is usually recognized at a fairly early stage and from then onwards the heart condition is kept under constant observation and assessment. The assessment, however, is to be considered grossly deficient if it does not include an evaluation of the child as a total individual. These children are subject to profound and most important psychological reactions to which the numerous writings on congenital heart disease make no significant reference.

These psychological problems may arise from two main sources, viz. (1) the physical handicaps produced by the cardiac disease, and (2) faulty parental attitudes.

Physical Handicaps

From the day of its birth every normal child sets about the task of establishing a psychological goal of emotional security. Anxiety-provoking situations are encountered all along the line of normal emotional development, and it is the way the child deals with this anxiety that determines his ultimate personality structure. In the child physically disabled by congenital heart disease, the anxiety-provoking situations become magnified and his ability to deal with them reduced.

For every infant, the first natural source of emotional security is found in satisfactory feeding from its mother's breast. An infant with cardiac disease may encounter difficulty with feeding and at once becomes the victim of anxiety. The anxiety produced by a perpetual struggle for breath is readily understood. The strain and exhaustion which accompany the passing of excreta and the dyspnoea that may interfere with sleep add to the infant's fears. As he grows older, new difficulties arise. At every stage he finds himself at a disadvantage. The development of motor power, co-ordination of movement, and ultimately walking, all represent an uneasy struggle. Every new phase calls for a supreme effort and nothing comes easily to the cardiac child. The world appears unsafe, threatening and frightening.

His daily activities soon become involved in the battle to keep up with other children. To a greater or lesser degree, he finds himself failing in this task. His activity is restricted, his ability to take part in games is limited, and his general relationship with other children is thwarted by obvious difficulties.

Sibling rivalry. It is common knowledge that problems of emotional maladjustment very often arise out of rivalry and jealousy between different members of a family unit. It is not necessary to elaborate on the various types of emotional situation which might arise; I only wish to point out that the problems of sibling relationships tend to become accentuated and complicated for the cardiac child, for instance, when he finds that he cannot compete with the physical attributes of his younger brother. A consideration of the constitution of the family must never be excluded in the assessment of the emotional problems of a cardiac child.

Psychological results. Thus, once a cardiac child is physically handicapped, psychological handicaps must follow. Very soon, unhealthy psychological defence mechanisms may develop. There are many ways in which these children may try to defend themselves against anxiety. Some may deal with the problem by abandoning the struggle and avoiding situations likely to confront them with anxiety. These children become increasingly asocial and withdrawn and adopt the attitude, 'I cannot manage, leave me out of it'. They may gradually become grossly introvert personalities, unable to establish normal interpersonal relationships.

Another group may react to their anxiety with a markedly over-dependent attitude towards their parents. They cling to their mother and become acutely anxious if threatened with any attempt to emancipate them from their emotional dependence. These are the children who are afraid to be left alone, cannot face going to school and generally fail to achieve that degree of emotional independence so essential to the satisfactory integration of any personality.

Resentment, frustration, jealousy, and an inability to compete with other children, may result in various forms of aggressive behaviour. Temper tantrums, crying spells, and other attention-seeking mechanisms may develop. More direct expressions of anxiety such as thumb-sucking, enuresis, nightmares, and nail-biting are often encountered.

Parental Attitudes

The recognition of the psychological reactions of these children leads naturally to a consideration of their parents. An adequate appreciation of the stress and strain to which these parents are subjected, and an understanding of their emotional reactions to the situation, become fundamentally important to a proper understanding of the psychological problem which I am attempting to outline.

When a mother learns for the first time that her child is suffering from congenital heart disease, she is obviously being confronted with a psychologically traumatic experience of considerable magnitude. Her immediate reaction and her subsequent behaviour and attitude towards her child will depend on a host of factors. If she is an emotionally well-integrated personality she will deal with the situation with a minimum of emotional disturbance; not so if she is already neurotically orientated. Her intelligence will be of some importance but of less significance than her emotional make-up. In addition to these personality factors, there will always be a variety of environmental circumstances which will influence the situation.

Feelings of guilt. In a great number of psychiatric disorders, guilt is the seed from which a host of emotional disturbances germinate. The problem under discussion is no exception. When a mother learns of her child's congenital affliction, one of her first thoughts is to wonder whether she might be in any way to blame. It is, after all, not easy to accept that cardiac malformations 'just happen'. The idea that the child's condition may represent some form of punishment readily asserts itself. A woman with an over-developed super-ego, particularly, will tend to find what in her mind would seem to be reasonable explanations for the calamity which has befallen her. In surveying her pregnancy period she will find evidence on which to pronounce herself guilty. Minor quarrels with her husband, the fact that she had not rested as she had been advised, or not attended adequately to her diet, and many other trivialities come rushing into her mind to assume tremendous significance and add fuel to

the fire of guilt. Guilt is readily aroused in the woman who has made it clear from the start of her pregnancy that she did not want this child (a reaction from marital strife, financial insecurity, or other reasons). The woman who gives birth to a daughter after a persistent and pathological insistence that she must have a son falls into a similar category.

The arousal of severe guilt feelings is then a not infrequent occurrence in the mothers of these children, and to a lesser extent in the fathers. Severe depressive reactions may develop as a consequence of these feelings of guilt.

Anxiety. It is perfectly normal for parents to react with anxiety concerning their child's illness. It is abnormal only when this assumes pathological proportions. It does not always flow directly from feelings of guilt; in many instances it simply represents an accentuation and reinforcement of previously established neurotic anxiety patterns. In such cases, a great deal will depend upon the nature of the interrelationship between the present anxiety situation and the psychodynamics underlying the previously existing anxiety pattern. In these unfortunate parents, the problem of their disabled child becomes all-absorbing, influences their every activity, and precludes them from anything resembling a normal way of life. The fear of impending disaster is ever with them.

Parental behaviour. The obvious question of how guilt feelings and pathological anxiety are likely to influence the parents' behaviour towards the child remains to be answered. In this connection, parental attitudes of rejection and overprotection become particularly prominent.

Rejection may express itself quite openly, when the parent will display an obvious lack of affection for the child. An unreasonable demand for perfection in behaviour and a generally over-critical attitude may develop. Failure is not tolerated and expressions of hostile aggression towards the child will be encountered. In extreme cases, emotional outbursts may arise during which such remarks as 'I hate you; I wish you were dead' will emerge from a neurotic mother who cannot escape from the torments of her inner conflicts of guilt and anxiety.

Gross *over-protection* is common. This faulty attitude may be the direct outcome of pathological anxiety or may represent a cover-up for a repressed attitude of rejection. It is a great temptation to over-protect a disabled child and it is only the parent who has made a completely adequate adjustment to the situation who will avoid falling victim to this pitfall. Once a mother's attitude towards her child becomes influenced by her own emotional maladjustment, extreme degrees of over-protection will occur. The children who become victims of such over-protection are kept 'wrapped in cotton wool', protected from every possible stress, strain and frustration, and deprived of the chance of a development of emotional independence.

It should not be necessary to belabour the fact that attitudes of rejection and over-protection are likely to produce in the child profound emotional disturbances and markedly abnormal personality integration. To discuss the details of the effects of these abnormal attitudes would involve an unwarranted description of a host of emotional reactions that might be encountered in any child subjected to these unfavourable influences.

PSYCHOLOGICAL HANDLING OF THE CARDIAC CHILD

It is hoped that the value and, indeed, the complete necessity of approaching the cardiac child as a *total individual* has been satisfactorily established. The serious consequences of emotional maladjustment and defective personality integration in these children cannot be over-emphasized. Consider the child who goes to operation with an already seriously damaged personality. The surgical repair of the cardiac lesion might be completely successful but the patient remains psychologically crippled. Instead of being made fit for a normal life ahead, he runs the risk of an unsatisfactory school and employment record, a poor future marital adjustment and generally unsatisfactory interpersonal and social relationships. In this way, the success of cardiac surgery becomes intimately related to the patient's satisfactory pre-operative psychological development.

The first essential to the correct psychological handling of congenital heart disease must be a thorough understanding and appreciation of the precise nature of the relevant psychological problems, as well as their possible implications and consequences. It is hoped that in following the course of this discussion, such understanding has been achieved.

By quoting the example of Kirklin at the Mayo Clinic, I have pointed out the steps which can be taken to overcome psychological difficulties pertaining to cardiac surgery itself. I only wish to draw the attention of thoracic surgeons to the efficacy of the approach which was outlined and suggest its adoption in a complete or modified form.

My recommendations concerning the psychological handling of the cardiac child during the pre-operative years are directed to the general practitioners, the paediatricians and the cardiologists. The aim which I have in mind is the prevention of the development of abnormal emotional reactions, disturbed behaviour, and defective personality integration, which I have shown can arise in association with this condition. I believe that there is a tremendous amount that can be done for these children in this respect. They require constant encouragement and reassurance. I want to stress that the question of whether a cardiac child will make a satisfactory emotional adjustment rests essentially in the hands of the parents. For this reason, it is towards the parents that psychological assistance should be principally directed. It is most important that recognition should be given to the value of devoting time and attention to these parents. If this is not done, it is quite impossible to treat the total problem entailed in any case of congenital heart disease.

The family. Once the diagnosis has been established, an attempt should be made to make a simple assessment of the family unit. In order to do this, a single short interview with each sibling would be required. Depending on circumstances, it may be necessary to interview the father on more than one occasion. The mother will require the most time and attention, the extent of which will depend on her specific needs for psychological assistance. This assessment of the family unit could be carried out in the space of very little time, and it would prove invaluable in gaining an insight into the problems not only of the patient but also of the parents.

I am convinced that thorough attention to the mother's difficulties would be richly rewarded. A few remarks on the aetiology of her child's condition, together with a little

patience in answering her questions on that score, could do a tremendous amount towards dispelling unnecessary feelings of anxiety, rejection and guilt. Misconceptions should be eradicated from the start. The mother should know that congenital heart disease is not uncommon, that medical science has made tremendous advances in this field, and that the treatment of this condition is often entirely successful. This preparatory reassurance would be most important during the initial distress from which the parents suffer.

The nature of the various emotional reactions and behaviour patterns that might arise in her child, and reasons for them, must be given adequate explanation. She must be advised how best to handle these disturbances. The problems of sibling rivalry must be explained and the dangers of over-anxiety and over-protection carefully elucidated. The mother should be encouraged to attend for periodic discussions of her problems to ensure an adequate control over the patient's emotional development.

The amount of psychological assistance which a mother may require will naturally vary with individual demands. If evidence of marked emotional disturbance in the parents is forthcoming, regular psychotherapeutic sessions will become necessary. The presence of grossly neurotic reactions would call for psychiatric aid.

CONCLUSION

I have no hesitation in expressing the view that a cardiac clinic is falling short in its responsibilities if it fails to give consideration to the psychological problems which I have outlined.

There remains one further point to be clarified. This discussion has been confined to psychological aspects of congenital heart disease, but it may be considered that a good deal of what has been said could be equally well applied to other conditions. This is in fact the case. The example of congenital heart disease has been used to draw attention to the possible importance of psychological aspects of organic disorders and to emphasize what I like to refer to as a total approach to medical problems. I hope I have at least succeeded in stimulating an interest in an approach which I believe in all sincerity to be a correct one.

SUMMARY

Attention is called to the importance of psychological considerations in the management of children with congenital heart lesions.

Reference is first made to the importance of these considerations at the time of operation on the heart.

The psychological problems of the period before the operation, from the time of birth, are then dealt with. These problems arise (1) from the physical handicaps produced by the cardiac disease, and (2) from faulty parental attitudes, and they are considered in some detail under these headings.

A faulty approach on the part of the mother may be due to feelings of guilt or to pathological development of the normal reactions of anxiety.

Abnormal parental behaviour may take the form of a hostile attitude to the child or to over-protection.

The details of psychological management are considered and the importance of this aspect of treatment is stressed.

Finally, reference is made to the possible importance of the psychological aspect in other organic disorders—the 'total approach' to medical problems.

PANCREATIC, HEPATIC AND VASCULAR CHANGES FOLLOWING LOWER-NEPHRON NEPHROSIS IN RATS *

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The speaker presented his findings in 26 male albino rats given subcutaneous glycerol and intravenous bile-salts in the form of deoxycholate. The dose of glycerol used was large enough to ensure severe intravascular haemolysis and consequent acute tubular necrosis (lower-nephron nephrosis) which, in the rat, is associated with a great number of other lesions of which only the pancreatic, hepatic and vascular were further described. Not all three lesions occurred in every animal and they varied in severity in affected rats.

The pancreas showed interstitial oedema, haemorrhage and polymorph exudate with duct changes and, in the later stages, a fibroblastic response around atrophic acini. Disseminated necrosis of abdominal fat occurred after 48 hours. Vascular changes seen microscopically were blood sludging in capillaries, hyaline swelling of arterioles, and loss of mural structure in muscular arteries. The commonest hepatic lesion was focal coagulative haemorrhagic necrosis, but a few rats showed great swelling of cell cytoplasm and nucleus without true necrosis of cells.

The pathogenesis of the syndrome of changes resolved itself roughly into answers to the following questions: Are the changes the result of a specific toxic effect of glycerol or the result of some unknown non-specific action common to glycerol and other agents, or is the kidney damage the primary event with all others simply a consequence of the uraemic state? Of the accepted views on the pathogenesis of the lower-nephron nephrosis, none appeared to provide an explanation of the other organ changes seen in the glycerol-treated rats, though capillary sludging remained an intriguing possibility. A comparison was then made with other morphologically similar experimental lesions in an attempt to obtain indirect evidence of the pathogenesis of the glycerol lesions, many of the examples being chosen deliberately on provocative grounds alone. Comparison was first made with the acute vascular change in rats suffering malignant hypertension or uraemia following nephrectomy, and with the proliferative so-called polyarteritis nodosa lesions reported after renal infarction in rats. In particular the apparent scarcity of these lesions in all experimental methods including glycerol administration was commented on and regarded as establishing not the importance of uraemia in the pathogenesis of these vascular changes but simply that on a frequency basis the evidence in glycerol experiments in favour of uraemia was as poor as that in other experiments. Attention was drawn to the fact that ethionine feeding to rats produces the same pancreatic changes as follow glycerol, and the further point made that ethionine like glycerol, results in renal tubular necrosis, hepatic lesions and adrenal haemorrhages. A final comparison was made between the haemorrhagic liver necrosis following glycerol and that seen after certain dietary procedures in the rat, the examples chosen being cystine intoxication and choline- and vitamin E-deficient diets, all of which are known to cause renal tubular damage. None of these other experimental lesions appeared to offer any explanation of the glycerol lesions but the frequent occurrence of renal damage in such feeding experiments did suggest the question: 'Are the dietary procedures in such dietary experiments always necessary or would not renal damage induced by any agent such as glycerol prove just as successful?'

No attempt was made to relate the experimental findings to human pathology.

* Abstract of paper presented at Research Forum, University of Cape Town, 17 March 1959.

South African Medical Journal : Suid-Afrikaanse Tydskrif vir Geneeskunde

EDITORIAL : VAN DIE REDAKSIE

HOSPITALIZATION OF CHILDREN

In recent years the approach to the question of hospitalization of children has undergone a radical change. This change is reflected in the increasing number of addresses and publications by paediatricians on this subject. Recently, at the Third Congress of the South African Paediatric Society, for instance, Dr. Epstein,[1] the President, delivered his opening address (which is published elsewhere in this issue) on the hospitalization of children. A memorandum[2] based on the findings of a subcommittee of the British Paediatric Association, in which their recommendations regarding the welfare of children in hospital are discussed, has been published recently.

Two factors in particular have contributed to this new approach. In the first place the changed pattern in the diseases of children must be pointed out. Until recently pneumonia, tuberculosis and other infectious diseases were the chief causes of disease in children. Today, however, paediatricians are becoming increasingly aware of those conditions which do not necessarily cause death but which nevertheless lead to unhappiness, distress and indisposition in the child and in members of his family. There is, for instance, a greater realization of the fact that many types of chronic illness, as well as nervous debility and maladjustment, spring from physical causes. Recent work done by Lanzkowsky[3] in this country bears this out. Lanzkowsky showed that there was a connection between pica, or perverted appetite in children, and iron deficiency, and that pica disappeared on the administration of small doses of inexpensive preparations of iron.

Another aspect of the change in the paediatrician's attitude towards diseases of children is reflected in the increasing emphasis on preventive medicine. The prevention of most nutritional troubles and many infectious diseases in children has become the aim of the paediatrician. Successful attempts have also been made to prevent accidents.

A second important factor that has contributed to the change in attitude to hospitalization of children is the new insight into the serious emotional and psychological disturbances that arise in children as a result of injudicious separation from their parents and homes.

The salient points in the new approach to the old problem of the treatment and welfare of children in and out of hospital can be summarized as follows:

1. A system for the treatment of day patients should be devised for children who do not require prolonged in-patient treatment in hospital. Recently, Dr. Smallpeice[4] published an interesting provisional report of an experiment conducted during the past few years in one of the two paediatric in-patient units in Oxford. These units were used for the observation, investigation and treatment of children as day patients. The following types of patients have been treated successfully in this way: small babies who fail to thrive and small babies with suspected fits or delay in development. In older infants and young children, feeding problems, delay in reaching milestones, specific defects, enuresis, etc., have been investigated.

2. For those children who do require hospitalization for a shorter or longer period, the following considerations should always be kept in mind:

(*a*) Accommodation should be made available wherever possible for the mothers of infants and toddlers, preferably with the mother sleeping in the same room as her child.

(*b*) There should be unlimited facilities for relatives and friends to visit the children, except when it is inconvenient because of considerations of staff, treatment, etc.

(*c*) Evening visits should be encouraged.

(*d*) The actual duration of the treatment should be kept as short as possible.

This new approach has, of course, its disadvantages as well as its advantages. To us it would seem, however, that the advantages outweigh the disadvantages. The consistent application of this approach would lead not only to a greater measure of health and happiness in children, but also to greater well-being in older children and adults.

1. Epstein, B. (1959): See page 358 of this issue.
2. Subcommittee of the British Paediatric Association (1959): Brit. Med. J., **1**, 166.
3. Lanzkowsky, P. (1958): S. Afr. Med. J., **32**, 1114.
4. Smallpeice, B. (1958): Lancet, **2**, 1366.

PEDIATRIESE BYDRAES

Die pediatriese vertakking van die medisyne is een van die vertakkings wat gedurende die laaste aantal jare dramatiese vooruitgang getoon het. Hierdie vooruitgang kon plaasvind as gevolg van die veranderende patroon van kindersiektes en die opkoms van 'n hele reeks middels wat 'n revolusie veroorsaak het by die behandeling van aansteeklike en besmetlike siektes. Die vooruitgang het egter ook plaasgevind as gevolg van lewendige en ondernemende navorsing deur kindergeneeskundiges—werk wat tot velerlei nuwe insigte en benaderings gelei het.

Wat die veranderende patroon van kindersiektes betref, sou ons kon wys, soos ons alreeds gedoen het,[1] op die feit dat sterfte by kinders tot onlangs hoofsaaklik te wyte was aan toestande soos pneumonie, tuberkulose en ander infeksietoestande. Vandag egter word die belangstelling van kindergeneeskundiges al meer gerig op daardie toestande wat nie noodwendig tot sterfte lei nie, maar wat tog baie ongelukkigheid, ongeskiktheid en ontsteltenis veroorsaak by die kind en by lede van sy familie. Ook neem voorkomende medisyne al meer 'n belangrike plek in by die benadering van die kinderarts.

As 'n opsommende stelling sou die volgende fasette van die nuwe insigte en benaderings, waarna ons verwys het, genoem kon word.

1. *Die patroon van kindersiektes*, veral wat betref infeksietoestande, het dramaties verander.

2. *Ernstige aangebore defekte*, soos 'n hele reeks abnormaliteite van die hart wat voorheen terapeuties onbereik-

baar was, kom nou binne die sfeer van aktiewe en suksesvolle behandeling.

3. *Voedingsprobleme en allergiese toestande.* Navorsing ten opsigte van die voedingsprobleme van kinders en van allergiese toestande wat dikwels, maar nie noodwendig nie, daarmee saamhang, het baie nuwe feite aan die lig gebring.

4. *Emosionele behoeftes.* Kindergeneeskundiges besef al meer die groot betekenis van verskillende aspekte van die emosionele behoeftes van kinders. Elders in hierdie uitgawe plaas ons byvoorbeeld 'n artikel* waarin die aandag gevestig word op die soort emosionele probleme van kinders wat hartoperasies moet ondergaan. Ook plaas ons in hierdie uitgawe 'n bespreking† van die oorwegings ten opsigte van die hospitaalbehandeling van kinders—oorwegings wat ontstaan en gegroei het as gevolg van die veranderende patroon van kindersiektes, maar ook as gevolg van die veranderende insigte in die emosionele behoeftes van kinders.

5. *Voorkomende medisyne.* Met die onlangse opkoms van die sosiale medisyne en die insig dat baie toestande wat vroeër as siektes beskou is, eintlik voorkombaar is, het daar 'n hele nuwe veld vir die kindergeneeskundige oopgegaan.

Ons hoop dat die artikels oor pediatriese onderwerpe wat ons in hierdie uitgawe plaas, sowel as die opsomming van die interessante lesings wat gelewer is ten tyde van die onlangse Derde Kongres van die Suid-Afrikaanse Pediatriese Vereniging, wat van 9-11 Oktober 1958 in Pretoria gehou is, daartoe sal bydra om die belangstelling in die vooruitgang op pediatriese gebied te prikkel. Ook hoop ons om gereeld in die toekoms ruimte in die *Tydskrif* beskikbaar te stel vir spesiale pediatriese bydraes.

* Kyk na bl. 349 van hierdie uitgawe.
† Kyk na bl. 358 van hierdie uitgawe.

1. Van die Redaksie (1959): S. Afr. T. Geneesk., 33, 222.

WHIPWORM DYSENTERY IN CHILDREN AND ITS TREATMENT WITH DITHIAZANINE IODIDE*

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The whipworm, *Trichocephalus trichiurus* or *Trichuris trichiura*, is a very common parasite, particularly in humid subtropical regions of the world. Stoll[1] estimated that approximately 355 million people harbour this parasite, yet relatively little attention has been paid to its presence in stools and the tendency has been to regard it as a harmless, non-pathogenic parasite.

In 1927 Fernan Nunez[2] described an 'amoebic-like' dysentery associated with heavy infestation of whipworm and, since 1939, several authors[3-8] have described series of cases where heavy whipworm infestation in children has caused prolonged diarrhoea, with mucoid, sometimes blood streaked, stools, tenesmus and abdominal pain, often complicated by loss of weight, rectal prolapse, and anaemia.

Beaver[9] has drawn attention to the relationship between the worm burden and the severity of symptoms. He has described a technique of counting ova in faecal smears as being a reliable method of estimating the number of worms infesting the host, and has graded the severity of infestation as follows:[10]

Under 5 ova per 1-3 mg. faecal smear	..	light
6-20 ova per 1-3 mg. faecal smear ..	..	moderate
21-50 ova per 1-3 mg. faecal smear ..	..	heavy
Over 50 ova per 1-3 mg. faecal smear	..	very heavy.

The whipworm has proved to be an extremely difficult parasite to eradicate. Hexylresorcinol used by mouth and piperazine have been shown to be ineffective. A 0·2% solution of hexylresorcinol given as an enema has been the only effective method of reducing the worm burden.[6] Recently however, a cyanine dye, dithiazanine iodide, administered orally, has been held to be effective in the eradication of this parasite.[11-14]

* 'Partel'—The Lilly Research Laboratories.

† The Amoebiasis Research Unit is sponsored by the following bodies: The South African Council for Scientific and Industrial Research, the Natal Provincial Administration, the University of Natal, and the United States Public Health Service (Grant E-1592).

DESCRIPTION OF CASES

A series of 15 children between the ages of 2 and 6 years were treated at King Edward VIII Hospital, Durban, for whipworm dysentery between February and August 1958. Of these, 12 were Indians and 3 were Africans. One of the Africans was a Mohammedan who lived with Indians and from the epidemiological aspect should be grouped with the Indians. The main features of these cases are illustrated in Table I and a brief discussion of the more important symptoms and signs follows.

Diarrhoea. Ten children had histories of diarrhoea for more than 2 months, 6 for more than 6 months, and 3 for more than 1 year. In 2 cases the parents were unable to say for how long the diarrhoea had been present. All had had antibiotic treatment for their diarrhoea, many of them on several occasions, without alleviation of symptoms. The 3 cases with short histories had been treated as bacillary dysentery for more than 2 weeks. One had had chloramphenicol, tetracycline, and neomycin before the diagnosis of whipworm dysentery was made. All 15 were investigated for bacillary dysentery and stool cultures were negative. Three children had associated amoebic dysentery which was effectively treated before any attempt was made to eradicate the whipworms.

Tenesmus and rectal prolapse. Tenesmus was a prominent symptom in 12 cases, the desire to defaecate being almost constantly present. Recurring rectal prolapse occurred in 8 of these children. Although most of the children were malnourished, 3 of those with rectal prolapse were not.

Stools. A characteristic feature of the stools was the excessive amount of mucous exudate. Blood was found only in the stools of the cases in which rectal prolapse was a complication. Fluid stools were present in 9 children, and

TABLE I. CLINICAL FEATURES ON ADMISSION: CASES 1-15

Case	Race	Age	Sex	Duration of Symptoms (months)		T.t. seen at Sigmoidoscopy	T.t. Ova in Faecal Smear	Hb (g %)
				Diarrhoea	Rectal Prolapse			
1	I	3	M	12	2/28	+	Massive	8·8
2	I	4	F	12+	12	Not done	100+	10·2
3	I		F	3	nil	Not done	103	4·8
4	A*	2	M	1	nil	+	241	11·4
5	I	4	M	7	6	+	569	6·9
6	A	6	F	6+	nil	+	382	7·6
7	A	4	M	1/4	nil	−	35	12·2
8	I	6	M	24	2	+	215	9·8
9	I	6	F	3/28	nil	+	230	5·6
10	I	3	F	2+	1	−	62	12·0
11	I	4	M	2+	3/4	+	56	6·3
12	I	3	M	6+	6	+	76	10·2
13	I	2	F	?	nil	Not done	92	12·3
14	I	3	M	6+	2	+	273	9·8
15	I	5	F	?	nil	Not done	80	7·2

* Mohammedan faith living with Indians.

in the remaining 6 the stools were loose and had a somewhat 'crumbly' appearance.

Sigmoidoscopy. Sigmoidoscopy was performed in 11 cases, in 9 of which numerous whipworms were seen attached to the mucosa of the rectum and sigmoid colon. The intervening mucosa appeared normal, but the flow of mucus was remarkable. The 3 cases which had been treated previously for amoebic dysentery showed no evidence of ulceration.

Ovum-counts. Beaver's method[9] of counting ova in simple faecal smears was used to estimate the severity of infestation. The initial figures shown are the average counts of 3 smears made from different samples of stool before treatment.

Blood findings. Only 6 cases had haemoglobin levels over 10 g.%, the highest level being 12·3 g.%. In 9 cases there was evidence of iron-deficiency anaemia. One case with coincident pulmonary tuberculosis had a normochromic normocytic anaemia with a haemoglobin of 7·6 g.%.

TREATMENT

Before dithiazanine iodide became available 4 cases were treated with 0·2% hexylresorcinol enemata. The results are set out in Table II. Although this treatment brought about symptomatic improvement in 3 cases it did not eradicate the whipworms. Of the 4 cases, 2 became reinfested and were subsequently treated with dithiazanine iodide; the 3rd case did not return for follow-up, and the 4th was not improved by one enema and as the dithiazanine iodide was now available he was not given a second enema.

The results of treatment with dithiazanine iodide in 14 cases are illustrated in Table III. Treatment was satisfactory in 13 cases and failed to cure 1 case. In 12 of the cases the drug was given for 5 days in a daily dosage of 20 mg. per

TABLE II. RESULTS OF TREATMENT WITH 0·2% HEXYLRESORCINOL ENEMATA ON THE STOOLS OF 4 CASES

Case	Hexylresorcinol Enemata	Stools Before Treatment			Stools 5 Days After Treatment		
		Macroscopic	Exudate	T.t.Ova	Macroscopic	Exudate	T.t. Ova
1	1	Fluid	+++	+++	Formed	−	Scanty
	1	Fluid	++	100+	Semiformed	−	50
2	2				Semiformed	−	29
	3*	Semiformed	++	78	Semiformed	−	134
3	1	Semiformed	+	103	Formed	−	21
4	1	Fluid	+++	241	Fluid	++	267

* 48 days after completion of course 2

TABLE III. RESULTS OF TREATMENT WITH DITHIAZANINE IODIDE IN 14 CHILDREN: FOLLOW-UP EXAMINATIONS SHOWN ARE THOSE DONE 10 DAYS AFTER EACH COURSE OF TREATMENT

Case	Before Treatment			First Treatment			Second Treatment			Third Treatment		
	Macroscopic	Exudate	T.t. Ova	Macroscopic	Exudate	T.t. Ova	Macroscopic	Exudate	T.t. Ova	Macroscopic	Exudate	T.t. Ova
1	Semiformed	+	115	Formed	+	9	Formed	−	0			
2	Fluid	++	134	Formed	−	0						
4	Fluid	++	267	Formed	+	0						
5	Fluid	+++	569	Formed	−	0						
6	Fluid	+++	382	Formed	+	9	Formed	−	0			
7	Semiformed	++	35	Formed	−	2						
8	Fluid	++	215	Formed	−	0						
9	Fluid	+++	230	Semiformed	+	143	Formed	+	73	Semiformed	+	144
10	Fluid	+++	62	Formed	+	6						
11	Semiformed	++	56	Semiformed	+	0						
12	Fluid	+	76	Semiformed	+	10	Formed	−	17			
13	Semiformed	++	92	Semiformed	−	17						
14	Semiformed	+++	273	Fluid	−	79	Semiformed	++	230	Formed	−	0
15	Semiformed	+	80	Semiformed	−	0						

lb. body-weight in 3 divided doses, the maximum dosage being 600 mg. per day. The other 2 cases were treated for 7 days.

This treatment proved effective in eradicating whipworm ova from the stools in 6 cases, caused a reduction to non-pathogenic levels in 6 cases, and failed in 2 cases. A second course of the drug was required in 4 cases before the whipworm ova were entirely eliminated.

One case failed to respond to treatment despite three 5-day courses of dithiazanine iodide. After the first two courses the ovum-count had been reduced by more than 50% but, after a third course, there were still more than 100 ova per smear. The stool was still semi-formed, but the

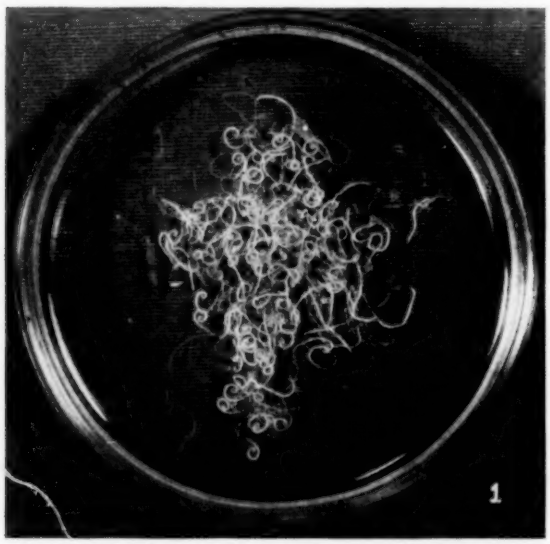

Fig. 1. 154 whipworms recovered from a single stool passed 24 hours after commencement of treatment with dithiazanine iodide.

frequency of defaecation was less. Whilst under treatment the child passed more frequent fluid stools than before. She was possibly sensitive to the drug, and probably the rapid passage of dithiazanine iodide through her large bowel did not allow long enough contact with the whipworms for effective treatment.

In another case, which had a massive infestation, the ovum-count was reduced by more than 50% after a 7-day course of treatment, but symptomatic improvement was minimal. A second course of treatment over 5 days resulted in no further improvement. He was given a third course of treatment lasting 10 days, which resulted in complete eradication of ova from his stools.

Symptomatic improvement in the majority of cases was rapidly achieved; 12 of the 14 cases began passing more formed and less frequent stools before the 5th day of treatment, and dead whipworms appeared in the stools from the 2nd day of treatment. Ovum-counts began falling on the 3rd or 4th day.

Only 4 of the earlier cases have been seen for follow-up more than 1 month after discharge and all 4 of these children were well. They had respectively 0, 1, 4 and 5 ova per faecal smear.

INCIDENCE

During the 7 months under discussion just over 17,000 children attended the Out-patient Department of King Edward VIII Hospital. Of these the proportion of Indian to African children was approximately 1 to 5. The incidence of whipworm dysentery was therefore approximately 4 Indians and 0·15 Africans per 1,000 sick children.

In a control series of 59 Indian and 55 African children between the ages of 1 and 6 years, with no history of diarrhoea and whose stools were normal in frequency and consistency, specific examination for whipworm ova revealed

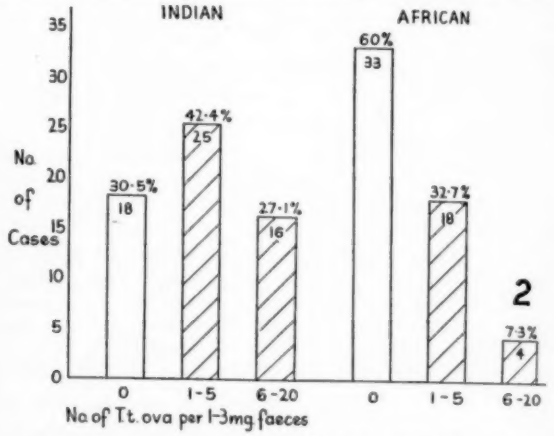

Fig. 2. Incidence and number of *T.t.* ova in the stools of normal Indian and African children 1-6 years of age.

the findings illustrated in Fig. 2. It will be noted that whipworm ova were present in 69·5% of the Indian children and 40% of the African children. In 21·7% of the Indian children the ovum-counts were more than 5 per smear, as compared with 7·3% of the African children.

It would appear, therefore, from this small study that whipworm dysentery and infestation are commoner in the Indian than the African child. This may be explained by the fact that Durban Indians grow their own vegetables, which are fertilized with their own faeces.

DISCUSSION

The life cycle of the whipworm is very simple.[15] Ova passed in human faeces require 3-4 weeks in damp soil or water to embryonate and become infective. Once ingested the shells of the embryonated ova are destroyed by the digestive enzymes of the host, and the larvae are released. In about 1 month these become sexually mature adults in the large bowel. There is at no stage a visceral invasion.

The warm humid conditions of the Durban climate are ideal for the proliferation of whipworms. In a survey of African adult males, Elsdon-Dew and Freedman[16] demonstrated that 61·9% of those resident in Durban for more than 2 years passed whipworm ova, whereas only 30·45% of those arriving in Durban for the first time were infected.

It has been estimated[6] that the output of ova per female whipworm may be as high as 300 per c.c. of faeces. Thus in 10 c.c. of stool passed by a child harbouring 10 female whipworms, there may be 30,000 ova—all potential whipworms for a child who eats the wrong piece of dirt.

Although fatal cases of whipworm infestation have been described, death is a rare complication. The two earliest reports of fatal cases found in the literature were from Switzerland in 1907[17] and from the Philippines in 1908.[18] Nevertheless, the serious constitutional upset, detrimental both to the physical and psychological development of the young child, produced by massive infestation with this parasite warrants vigorous treatment. Although not a common cause of dysentery, whipworm infestation must be borne in mind whenever a child presents with a history of prolonged diarrhoea, tenesmus, and recurring rectal prolapse.

The 8 cases, all Indian, which presented with rectal prolapse form a high proportion of the total number of Indian children with rectal prolapse seen at King Edward VIII Hospital during this period.

Whipworm infestation, therefore, should always be considered in the differential diagnosis of rectal prolapse. Ovum-counts are easily done and give an indication of the severity of the infestation, and proctoscopy will reveal the whipworms in most cases.

Treatment with hexylresorcinol enemata not only involves hospitalization of the patient, but also an unpleasant technique fraught with the danger of severe burns if the solution is allowed to come into contact with the skin.

Dithiazanine iodide has proved to be an effective drug for the eradication of whipworms. The recommended daily dosage of 20 mg. per lb. body-weight appears to be adequate, but recent reports[13,14] recommend that courses should be extended to 7-10 days. Repetition of courses in this series might have been obviated had longer courses been used initially, especially in the cases with massive infestations. No preparation of the patient is required before using dithiazanine iodide, and the majority of cases can be treated at home.

Side-effects due to gastro-intestinal irritation may be encountered, but Swartzwelder *et al.*[13] reported no side-effects serious enough to warrant the discontinuation of treatment in over 400 cases, some of which were treated for 21 days. In the present series one child exhibited some intolerance to the drug.

As dithiazanine iodide is not absorbed, the stools are coloured blue or green. This forms a useful indication whether the child is receiving his treatment.

SUMMARY

Fifteen cases of dysentery in children caused by heavy whipworm infestation are described.

Satisfactory results of treatment with dithiazanine iodide are discussed.

We are grateful to Dr. H. L. Wallace, Head of the Department of Paediatrics, King Edward VIII Hospital, for his critical guidance and interest; to Dr. R. Elsdon-Dew, Director of the Amoebiasis Research Unit, for his invaluable inspiration, advice and criticism, and for permission to use his laboratory facilities; to the staff of the Amoebiasis Research Unit for their assistance; to Dr. S. Disler, the Medical Superintendent of King Edward VIII Hospital, for permission to publish the cases; and to The Lilly Research Laboratories for generous supplies of dithiazanine iodide.

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POLIOMYELITIS AT BIRTH DUE TO TRANSPLACENTAL INFECTION

REPORT OF A CASE

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Although the occurrence of intra-uterine poliomyelitis was debatable for many years, evidence has been accumulated that such infection does occur. Indeed, the knowledge that the viruses of other infectious diseases including variola, varicella, morbilli and vaccinia have been shown to cross the placenta, strongly suggests that poliomyelitis and other enteroviruses behave in a similar fashion. Evidence has been presented for intra-uterine infection with an enterovirus other than poliomyelitis, namely, a coxsackie B-group virus in an infant dying with meningo-encephalitis and acute diffuse myocarditis.[1] Proof of a stage of viraemia in poliomyelitis, reported by Ward *et al.*,[2] has drawn attention to the likelihood of intra-uterine infection in a foetus born of a mother in the acute stage of poliomyelitis. In this paper we describe a case of such infection in an infant born to a mother suffering from paralytic poliomyelitis.

During the period October 1954 to December 1957, 581 cases of poliomyelitis in Europeans were treated at the Johannesburg Fever Hospital. Of these 403 cases were suffering from paralytic poliomyelitis and 178 from non-paralytic poliomyelitis. The major epidemic was due to a virulent strain of Type I virus but in 1957 Type III virus was responsible for 20% of cases.

CASE REPORT

A European woman aged 26 was admitted to hospital on 25 June 1956 with an illness of 12 days duration characterized by back ache and vomiting for 7 days and thereafter pain in the head and neck. Tonsillectomy had been carried out many years ago. Gestation was estimated to be of 32 weeks duration. One of her 2 children, a boy aged 3, had been admitted to this hospital 8 days previously with symptoms of paralytic poliomyelitis of 4 days duration. Type I poliomyelitis virus was isolated from his stool.

The obstetrical history of the patient included a Caesarean section in 1952 for placenta praevia and a forceps delivery in 1955. Both infants were healthy. On examination the patient was found to have stiffness of the neck and tightness of the ham-

strings with moderate weakness of the proximal muscle of the left upper and left lower extremities. The size of the uterus was compatible with a gestation of 32 weeks. There was no progression of paralysis after admission.

Laboratory investigations on admission were as follows: Blood count: Haemoglobin 13·5 g.%, WBC 22,000 per c.mm., polymorphonuclears 89·5%, lymphocytes 9·0% and monocytes 1·5%. Cerebrospinal fluid: Polymorphonuclears 24 per c.mm., lymphocytes 42 per c.mm., RBC 150 per c.mm., protein 48 mg.% and sugar 46 mg.%. No bacteria were isolated. Poliomyelitis and coxsackie virus were not isolated from the stool.

Normal labour commenced on 30 June and the patient was delivered of a 5½ lb. female infant. The baby gave a small gasp and failed to breathe. The pharynx was suctioned orally by the sister in charge. Respiration was assisted manually by the use of a Drager Poliomat apparatus. The heart continued to beat normally until death occurred after 1½ hours. Lumbar puncture carried out after the infant's death produced a C.S.F. which was found to contain RBC 2,720 per c.mm., polymorphonuclears 384 per c.mm., lymphocytes 253 per c.mm. and protein 244 mg.%. Type I poliomyelitis virus was isolated from the infant's stool and from specimens of brain, spinal cord and heart tissue at the Poliomyelitis Research Laboratories.

Thirteen days later the nursing sister who had suctioned the child's pharynx was admitted to hospital with severe paralytic poliomyelitis. Type I poliomyelitis virus was isolated from her stool.

DISCUSSION

Intra-uterine infection can be accepted in the case presented since the infant was born with paralytic poliomyelitis due to Type I virus. Although virus was not isolated from the mother, the clinical evidence established beyond doubt that her illness was paralytic poliomyelitis, and the isolation of Type I virus from one of her children suffering from paralytic poliomyelitis a few days before her own illness commenced can be taken as confirmatory.

The first concrete example of intra-uterine poliomyelitis was reported in 1954 by Schaeffer *et al.*[3] Their case appears to have provided the first demonstration of poliomyelitis virus in both placenta and foetus infected during pregnancy during the viraemia stage of the mother's illness.

Swarts and Kercher[4] reported the isolation of Type I poliomyelitis virus from the cerebrospinal fluid of both a mother and her newborn child.

Barsky and Beale[5] reported on 6 infants born to mothers suffering from poliomyelitis. These were drawn from a group of 51 pregnant poliomyelitis patients during 1953 admitted to hospitals in Winnipeg and occurring among a total of 1,158 poliomyelitis patients treated. Meconium and cord blood were examined for poliomyelitis virus. In 3 infants who survived no virus was isolated from stool or cord blood. In 3 stillborn infants Type I virus was isolated from stool but not from cord blood. All the mothers were at, or nearly at, full term on delivery. These authors consider it probable that cases of infection in infants are missed when virus studies are not carried out.

Shelekov and Habel[6] showed that both an apparently healthy infant born in a respirator, and the mother, who suffered from acute poliomyelitis, were infected with Type I poliomyelitis virus. Intra-uterine infection was suggested by the finding of virus in the placental villi and in the rectal ampulla of the infant at delivery. This is probably the first recorded example of an infant born in the acute stage of maternal poliomyelitis who suffered from subclinical poliomyelitis. Antibody titrations were carried out on mother and infant. The mother's serum neutralized Type I virus when undiluted 7 days before delivery and the titre rose to 1 in 256 in 2 months, remaining at that level after 5 months. The infant's antibody in cord serum was low at birth, the titre being 1 in 4 against Type I poliomyelitis virus, but at 2 months and at 5 months the level was 1 in 256.

SUMMARY

A case of intra-uterine poliomyelitis due to transplacental infection with Type I poliomyelitis virus is described.

Part of the available literature on the transplacental transmission of poliomyelitis is summarized.

We are grateful to Dr. Scott Millar, Medical Officer of Health, Johannesburg, for his permission to publish this report and to the staff of the Poliomyelitis Research Laboratories for the virus studies.

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CHILDREN IN HOSPITAL*

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A civilization such as ours is geared to a very large extent to the mental and physical welfare of its children. It is of course a truism that in order to survive we must take care of our children. Primitive man relied on the survival of the strongest of his numerous progeny, which led to practices such as leaving infants on mountain tops to endure the rigours of nature. With the introduction of birth control and the decrease in the birth rate, it has become necessary to ensure the survival of greater numbers of children. Public-health measures such as the introduction of clean milk, *pari passu* with the development of our machine age, have reduced infantile mortality to a low level. Antibiotics have converted formidable diseases into relatively minor illnesses.

As mortality and morbidity in children's diseases decrease, other factors become more prominent. The study of the effects of emotional disturbances has made rapid strides since Freud. Parents are becoming increasingly conscious of the importance of giving their children an emotionally balanced upbringing. Although we are far from the ideal, a great deal has been learnt. The public is avidly mopping up information on this subject, and writers like Benjamin Spock have become best sellers.

In one aspect of this problem we in South Africa have lagged sadly behind—that is in the attitude of the authorities towards children in hospital. I say 'authorities' because I do not think many paediatricians agree with the manner in which children, in particular small children, are isolated from their parents on admission to hospital. I can conceive of no greater psychic trauma to a child than that created by separation from its mother in its early formative years. Physical separation of child from mother occurs at birth with the cutting of the umbilical cord, but the emotional cord is not severed for very many years. It is therefore important that when a child, particularly a child under the age of 4 years, is admitted to hospital, special provision should be made for the mother to stay in the hospital with the child, either full-time or part-time, or that wherever possible unrestricted visiting should be allowed.

Moreover, children's wards should be made pleasanter. Children respond to atmosphere. Walls should be painted in pleasing colours, with glass partitions low enough to enable the child to

* Chairman's Address, Third Congress of the South African Paediatric Association, Pretoria, October 1958.

look out into the corridors. Cubicles should not be designed like prison cells. There should be a proper playroom where the convalescent child can spend his time. It should be equipped with sturdy toys such as are used in nursery schools. Where possible the child should have his own clothes. If the hospital provides them, there is no reason why they should not be pleasant to wear and to look at. The extra cost would be negligible.

Careful studies of the child in hospital have been made in various parts of the world. One of the most recent and the most thorough has been that of James Robertson,[1] a psychologist on the staff of the Tavistock Institute of Human Relations, who has not only written a book *Young Children in Hospital*—a book that I would strongly recommend to you all—but has produced two films, *A Two-Year-Old Goes to Hospital* and *Going to Hospital with Mother*. The second of these will be shown today.

I cannot do better than follow the arguments laid down by Robertson. Mr. Robertson states that the child under the age of 4 years needs the greatest consideration. He is dependent on the mother for his physical and emotional needs. His personality develops normally only when he lives in an environment where he can get the love of his mother.

When a child is ill at home it is expected that his mother should be in constant attendance. In hospitals it has become accepted that mothers, if not an actual nuisance, are a potential nuisance, and they should therefore be allowed to be with their children only at certain specified hours.

However kind and considerate the nursing staff may be, it is obviously impossible to apportion any one nurse to constant attendance upon any one child—the nearest that a hospital could approach to supplying the child with a mother-substitute. Days off, differing hours of duty, and the monthly changes of staff (a pernicious system in a children's ward) create a very confusing picture in a child's mind, and he does not know to whom he can turn when in distress.

Who in this room has not seen the obvious case of neglect due to shortage of staff: the child who is crying his heart out because everyone is too busy to attend to him; the child who unavailingly calls for toilet attention, or the infant who has been lying in wet or soiled napkins for a long period of time. Frequently napkins are put on to toddlers who have already been toilet trained, with adverse psychological effect. Many children become neurotic after a period in hospital.

Robertson states that in the process of 'settling-in' a child goes through 3 phases:

1. *Protest*—the obvious external rebellion against being left by his mother.
2. *Despair*—in which the conscious need of his mother is coupled with increasing hopelessness.
3. *Denial*—in which he represses his feeling for his mother. The child seems to have settled down and to be enjoying the ward routine. When the mother visits, he tends to ignore her. At the time of discharge he clings to the nurse and may not even wish to go home. This is often represented to parents, nurses, medical students and doctors as an indication that the child has become well adjusted to his stay in hospital.

There are other well documented and controlled studies on this subject. Faust,[2] in 1952, was responsible for a report issued by the Department of Pediatrics and Anesthesiology, Albany Medical College, on *Reducing Emotional Trauma in Hospitalized Children: A Study in Psychosomatic Pediatrics*. Prugh,[3] in 1953, also in the USA, wrote *A Study of the Emotional Reactions of Children and Families to Hospitalization and Illness*. Vaughan,[4] in 1957, wrote on *Children in Hospital*.

In what way can we minimize these emotional shocks to sick children?

1. We must keep out of hospital as many children as possible. With modern drugs it should not be necessary to admit many who in pre-antibiotic days would have had to go into hospital.

2. Unrestricted visiting except for times when this would be of great inconvenience to the staff.

3. Evening visits such as practised at the Hospital for Sick Children, Great Ormond Street, London. Professor Moncrieff[5] explained this in a lecture given at the last Medical Congress held in Durban. In this hospital mothers are encouraged to visit their children daily, wash them, feed them, and put them to sleep. Thus the child is settled before the mother departs.

4. Mothers must be allowed to stay in hospital with their younger children, and children's hospitals must be altered to allow this to take place.

I need hardly mention the work of the late Sir James Spence of Newcastle, a fine humanitarian and a great paediatrician who, 30 years ago, successfully pioneered this type of hospitalization in Great Britain. It is only in recent years that his ideas have been accepted. A paediatric unit at Amersham General Hospital has been converted to allow mothers to stay with their children. This hospital is shown in today's film. Dr. D. MacCarthy, the paediatrician in charge of Amersham, is so pleased with the results that he has also converted the paediatric unit at Stoke Mandeville, which was almost ready for occupation. He showed me this ward when I visited him last month.

This subject, as far as I know, has not been dealt with at previous medical congresses in this country, though it has been discussed in other countries. There are obviously important aspects that I have omitted. There is no time in a paper as general as this to consider the practical difficulties in the wards, the problem of the child who has to make a prolonged stay in hospital, and the educating of nurses, medical students and doctors in this aspect of mental health. I realize that the solution in South Africa is not an easy one. It is extremely difficult to break down prejudices and established traditions. One would have to persuade the highest authorities in the nursing profession that a change of this nature, whilst it would be primarily in the interests of the child, would also assist the nursing staff. Contrary to popular belief, hospitals that have admitted mothers with their children have found that, far from interfering with the work of the ward, the mothers are very helpful and relieve the nursing staff of much unskilled work. Also the danger of cross infection is reduced.

I hope that the ideas that are gaining ground overseas will soon be established practice in South Africa, and that the new children's hospitals will be designed to meet the psychological as well as the physical needs of the child.

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THIRD CONGRESS OF THE SOUTH AFRICAN PAEDIATRIC ASSOCIATION, PRETORIA, OCTOBER 1958 : SUMMARIES OF PAPERS

VIRUS DISEASES IN CHILDHOOD by Dr. James Gear, *Johannesburg*

Dr. Gear surveyed recent developments in the field of virus diseases. He noted that in 1958 there were few cases of *poliomyelitis* in South Africa, contrasting with its incidence in 1956-57, when the most intensive and severe epidemic ever experienced in this country occurred. Although this diminished incidence suggested that the vaccination campaign had been successful it was too early to come to this conclusion. However, it was satisfactory to note that the formalinized vaccine stimulated the production of serum antibodies in the majority of children vaccinated and therefore it might be presumed that it also protected the majority of children against paralytic poliomyelitis. Unfortunately some children did not respond well to the full course prescribed and there had been some cases of paralytic poliomyelitis in triply vaccinated children. It was clear that the best answer to poliomyelitis still had to be found. This might be a live-virus vaccine, for which already relatively avirulent strains had been developed and trials had reached an advanced stage.

Since the discovery of the *Coxsackie viruses* further work has shown that they fall into 2 groups. Group A has been identified as the cause of herpangina and of a pyrexial illness with lymphadenopathy, and as one of the causes of the aseptic meningitis syndrome. Coxsackie group-B viruses have been identified as the cause of Bornholm disease and of pharyngitis with pyrexia,

and as one of the most frequent identified causes of aseptic meningitis. It has also been clearly incriminated as the cause of myocarditis neonatorum, which was first proved to be due to this virus by the staff of the Poliomyelitis Research Foundation.

The application of the tissue-culture technique to the study of poliomyelitis has resulted in the discovery of the *ECHO group of viruses*, of which so far 24 different serological types have been identified. Several of these have been shown to cause illness associated with fever and a rash, and in other cases with the aseptic meningitis syndrome, sometimes associated with fever and a rash. The Coxsackie-A-like ECHO 9 virus caused the most extensive epidemic of aseptic meningitis ever recognized in North America and Europe in 1955-56. At the same time this virus was isolated from several cases of the aseptic meningitis syndrome occurring in such widely separated places as Johannesburg, Durban and Port Elizabeth, indicating that the infection had also been widespread in South Africa.

The year past was noteworthy for the *pandemic of Asian influenza*. This was caused by influenza virus A of an antigenic type different from the A strains encountered previously. It first appeared on the scene in China, from where it spread widely and within 6 months had involved every country in the world.

The influenza virus has the ability to undergo these antigenic changes and so to some extent defeating the immune mechanisms of the host. In this pandemic the death rate from respiratory infections rose steeply in most countries of the world but at no time was there a suggestion that it was assuming the virulent form seen in 1918. In most places children were more severely affected than adults and there were several deaths amongst them, in most instances associated with a secondary *Staphylococcus aureus* infection of the lungs. Prior vaccination was shown to be of definite value in preventing the illness in the majority of those inoculated.

Hepatitis in the neonatal period has claimed increasing attention and recent work has done much to clarify its causes. Coxsackie group-B virus, which, as we have seen, may give rise to severe, sometimes fatal, illness in newborn babies, is one of these causes. The virus of herpes simplex, which commonly causes acute aphthous stomatitis in young infants, sometimes causes severe liver damage which may be fatal.

A virus somewhat resembling in its effects the virus of herpes simplex is the virus of cytomegalic inclusion disease. It, too, appears to be a very prevalent infection which only occasionally gives rise to severe liver damage, though sometimes with a fatal outcome. The characteristic inclusion bodies, in addition to being found in the tissues *post mortem*, may also be found in living patients by liver biopsy, or more practicably in the epithelial cells found in the urine. This virus, too, produces characteristic changes in tissue culture which are of value in diagnosis.

Recent work has suggested that cases of *jaundice in newborn babies* associated with *hepatomegaly* are also probably due to a virus, and it has been suggested that the virus responsible is the virus of serum hepatitis.

To confirm the diagnosis of a virus infection *the techniques* relied upon are, firstly, the isolation of the virus and, secondly, the demonstration of the development of the corresponding antibody. It is essential in the serological tests that an acute-phase serum should be compared with the convalescent-phase serum, which should show a significant rise in titre against the suspected virus before the suspicion can be regarded as confirmed.

As our knowledge of the virus diseases increases, the need for *laboratory facilities* becomes imperative. Indeed, it is only by the routine laboratory investigation of these cases that it is possible to arrive at an accurate specific diagnosis.

THE MEDICAL ASPECT OF HYPOTHERMIA by Prof. F. J. Ford, *Cape Town*

Hypothermia has received more attention in the past 20 years than it did formerly. The reasons for this are various, but the 3 major ones are probably the requirements of high-altitude flight and of protection for the victims of misfortune at sea, and the development of cardiac surgery. There are in the literature few references to hypothermia in children, and these are concerned almost entirely with the neonate.

The purpose of the present communication was to draw attention to the relatively common occurrence of hypothermia in infants, meaning a rectal temperature of less than 95°F (35°C). A brief review of 20 cases noted at Cape Town within the past 18 months showed that, whilst the majority were newborn premature infants chilled to levels down to 78°F before admission to hospital, excessively low temperatures were also found in babies up to 10 months of age who were quite well nourished. Such dramatic chilling was shown to be possible during hospital care, during admission procedure, and even in an incubator apparently functioning normally.

The treatment was considered and the suggestion made that medical orientation in the matter of temperature recording needs revision. Even a 'low-reading' thermometer, calibrated down to 85°F, may not be an adequate instrument to add to the standard ward equipment, for, on occasion, temperatures below its range had to be taken with a lotion thermometer. A plea was made for better preventive measures in the planning of children's hospitals, even in very temperate climates, in the transport of sick children to hospital, and in the medical and nursing procedures subsequent to their arrival there.

NEONATAL HYPERBILIRUBINAEMIA by Dr. M. H. Shnier, *Johannesburg*

Jaundice is the commonest symptom exhibited by the newborn infant. The causes of this condition are numerous; they are classified as follows: 1. Physiological; 2. Haemolytic [(*a*) Rh incompatability, (*b*) ABO incompatability, (*c*) congenital spherocytic anaemia]; 3. Haemorrhagic [(*a*) cephalhaematoma, (*b*) subdural haemorrhage]; 4. Infective [(*a*) congenital syphilis, (*b*) infective hepatitis, (*c*) umbilical sepsis, (*d*) septicaemia, (*e*) glandular fever, (*f*) cytomegalic inclusion-body disease, (*g*) toxoplasmosis]; 5. Congenital atresia of the bile ducts; 6. Inspisated bile syndrome; 7. Galactosaemia.

The most important of these causes are the group referred to as 'physiological' and the haemolytic group.

In 1950 two groups of workers on either side of the Atlantic drew attention to kernicterus occurring in jaundiced neonates but not associated with haemolytic anaemia. In 1952 workers in England associated this condition with elevated levels of serum bilirubin. A year later it was shown that the yellow staining of the basal nuclei of the brain was caused by 'indirect' bilirubin. The final piece of this fascinating jig-saw puzzle was dropped into place when it was shown that the cause of the accumulation of indirect bilirubin in the blood was inability on the part of the liver to convert 'indirect' bilirubin to the direct variety.

Series of Bantu Cases

As no cases of kernicterus had ever been described in the Bantu, and in order to investigate the subject of neonatal hyperbilirubinaemia, 211 cases of jaundice in newborn infants were collected at Baragwanath Hospital, Johannesburg, over a period of 8 months. The investigation confirmed that Rh incompatability is a rare phenomenon in the Bantu races. During this survey only 4 cases of Rh sensitization occurred among 107 Rh-negative mothers. We found that the incidence of Rh-negativity in the mothers was 8·6% compared with 15% in the European population. The investigation also showed that the premature Bantu infant is more susceptible to jaundice than the full-term: of 211 cases, 148 were premature while only 63 were full-term.

What part does ABO incompatability play in the causation of hyperbilirubinaemia in the neonate? Theoretically, it can occur if the mother is group O and her infant group A or B, or if the mother is group A or B and her infant group B or A. This set-up plus one or more of the following criteria were found to be necessary for the diagnosis of ABO incompatability:

1. Evidence of severe haemolysis as evidenced by a falling haemoglobin level, reticulocytosis, splenomegaly, and a rapid onset of jaundice.

2. Evidence of red-cell sensitization as evidenced by a positive Coombs' test.

Of the 53 cases with an ABO set-up favouring incompatability, only 21 cases fulfilled the above criteria. Of these 8 were premature and 13 were full-term, and only 7 showed evidence of severe haemolysis.

What part does haemolysis play in the production of physiological jaundice? In 150 unselected cases in this series the maximum bilirubin levels were plotted against the haemoglobin levels. The results showed that high levels of both substances

coexist in some cases, and that no relationship exists between the two; there was no evidence that patients with high bilirubin had low haemoglobin or *vice versa*. This suggests that haemolysis does not play an important part in the production of physiological jaundice.

Of these 211 cases, of which 70% were prematurely born, 107 had bilirubin levels between 12·1 and 20 mg. per 100 ml. of serum, and 48 cases above 20 mg. (of which 69% were premature infants).

Of the 14 cases of *kernicterus* in this series, 12 were in premature infants. One of the remaining cases had a birth weight of 5 lb. 11 ounces, but weighed only 5 lb. when he developed the disease. The other case had a maximum bilirubin level of 35 mg. per 100 ml. of serum. There were 12 deaths among the patients with kernicterus and all developed symptoms with remarkable regularity between the 4th and 6th days of life, the time of the peak bilirubin levels in the serum.

The earliest signs of kernicterus are failure to take feeds, vomiting, profound lethargy, cyanotic attacks and irregular respiratory movements. Neurological signs such as divergent strabismus make an early appearance and are an important clue to the diagnosis. Oculogyric crises, head retraction, and hyper- and hypotonia occur a little later. These signs are easily overlooked. If the child survives, most of the symptoms abate and sudden brief opisthotonic attacks and irritability remain the sole clues to the diagnosis. Delayed development, deafness and spasticity appear later; athetosis, which is usually considered to be the hall-mark of the disease, only becomes manifest at about the age of 4 years.

Many aetiological factors have been named in the causation of kernicterus, including sepsis, anoxia, diarrhoea, chemotherapeutic agents such as sulphisoxazole, and vitimin K, have all been blamed as contributing to the development of the disease. These factors were, to a large extent excluded in this series of cases.

Diarrhoea, however, is worthy of special mention because the resultant dehydration may concentrate the indirect bilirubin in the serum and body tissues to dangerously high levels. If diarrhoea complicates neonatal jaundice, frequent bilirubin estimations must be carried out if kernicterus is to be avoided.

Exchange transfusion is the only method yet available in the treatment of hyperbilirubinaemia. It should be noted that bilirubin may have accumulated in the extravascular spaces and may flood the circulation after the exchange transfusion has been done. It may therefore be necessary to repeat the bilirubin estimations and the exchange transfusion.

At what level of serum bilirubin should the exchange transfusion be carried out? No single level can be given; it is inversely proportional to the birth weight of the child. In the above series 3 patients developed kernicterus with bilirubin levels between 15·0 and 17·1 mg. per 100 ml. of serum and similar cases have been reported by others. We have therefore, accepted the following maximum levels of bilirubin as indications for exchange transfusion:

Body weight 3-3½ lb. ..... 15 mg. of serum bilirubin %.
Body weight 3½-4½ lb. ..... 16 mg. of serum bilirubin %.
Body weight 4½-5½ lb. ..... 18 mg. of serum bilirubin %.
Body weight 5½ lb. and over ..... 20 mg. of serum bilirubin %.

Since adopting these criteria we have seen no further cases of kernicterus in neonatal hyperbilirubinaemia.

A Pilot Scheme for Bantu Infant Feeding by Dr. N. M. Mann, *Durban*

Malnutrition and gastro-enteritis are the overwhelming problems in the children's wards of King Edward VIII Hospital, Durban. Twenty per cent of 5,000 admissions per year are attributable to malnutrition, with a mortality rate of 53%.

The City Council resolutely insists that the feeding of indigent families is not their responsibility, but the Central Government's. To overcome this impasse Roundtable provided financial backing for an experimental milk scheme to feed 300 babies up to 3 years old for a 3-year period, at the cost of £16 per child.

In the first 6 months of operation at a large city health clinic only 28·5% of mothers and babies attended regularly. Reasons for this poor response were discussed.

The average cost of treating a child with kwashiorkor in hospital is £45. Thus, the 402 children who survived this disease in 1956 cost over £18,000. With the same amount of money over 1,100 children could probably be kept free of the disease over a 3-year period.

To overcome this economic absurdity in a country where there is a readily available supply of milk, a way must be found to implement the obvious policy that 'prevention is better than cure'.

The Hyperosmolarity Syndrome by Dr. M. D. Bowie, *Cape Town*

Gastro-enteritis is a major paediatric problem in South Africa and most of the deaths due to this condition can be attributed to dehydration and electrolyte disturbance. Hyperosmolarity may be defined as an electrolyte disturbance in which the serum sodium concentration is above 150 mEq./l. due to a relatively greater loss of water than of electrolytes, resulting in raised serum concentrations of electrolytes.

Factors favouring increased water loss are (1) low stool electrolyte concentrations, (2) high environmental temperature, (3) hyperpyrexia and hyperventilation, (4) reduced water intake, and (5) increased renal water requirements in high-protein feeding. One factor tends directly to increase the salt concentrations in the serum and that is the treatment of gastro-enteritis with isotonic or hypertonic salt solutions.

The condition is difficult to diagnose clinically but a third of the cases admitted to the Children's Hospital in Cape Town exhibited hyperosmolarity. A history of curtailed fluid intake, hyperpyrexia, hyperventilation or administration of hypertonic salt solutions in therapy should lead one to suspect the condition. Clinical features include a doughy scleremalous texture of the skin, and severe illness with minimal dehydration and signs of neurological dysfunction varying from spasticity to coma and convulsions. Convulsions are 3 times as common in hyperosmolaric infants as in those with normal electrolyte concentrations. Biochemical changes include raised serum sodium and chloride concentrations with a variable potassium level. Practically all cases are acidotic with raised blood urea.

Of a total of 43 infants with hyperosmolarity studied, 8 have died. Of these 4 showed cerebral-sinus thrombosis, 1 peripheral gangrene, and 1 convulsions and a high CSF protein; 2 died from other unrelated causes. In addition 3 infants who recovered were discharged with serious residual neurological manifestations (e.g. mental retardation, and hemiparesis and spasticity). In no infant with gastro-enteritis without hyperosmolarity were thrombotic lesions found at autopsy.

The high incidence of thrombotic lesion in hyperosmolarity are unexplained. Haemoconcentration appears an unlikely explanation, for haematocrit studies reveal a lesser degree of haemoconcentration in the hyperosmolaric cases than in non-hyperosmolaric infants.

Treatment consists of replacement of both water and electrolyte. Correction of metabolic disturbance should be gradual, using fluids of low sodium and chloride concentrations, viz. half-normal saline or half-strength Darrow's intravenously. M/6 lactate to correct acidosis should be avoided, for this is equivalent to giving isotonic saline.

Craniostenosis by Dr. H. Gordon, *Johannesburg*

Skull growth will not continue if brain growth ceases, but the brain continues to grow when skull growth ceases or is impaired when the sutures fuse prematurely in craniostenosis. This continued growth may lead to severely increased intracranial pressure. The condition is not as uncommon as is often thought, the absence of large series in the literature being mainly due to recognition only of the severest cases.

The diagnosis is made clinically by the deformity which depends on the sutures prematurely fused, the age at which they fuse, and the order of fusion where more than one suture is involved. X-ray is confirmatory and demonstrates absence of sutures.

No unselected series of cases appears in the literature and only two reports of series of any size, both of which are reports of cases surgically treated in Boston—one of 36 cases and one of 50 cases.

I have analysed 33 cases, unselected in that none has presented with complaints referable to craniostenosis. Of these 20 showed fusion of the sagittal suture and males predominated—the re-

mainder showed a combination of sutures affected. Two cases showed associated congenital deformities. Of 8 families studied fully, 5 showed a familial incidence. All cases were asymptomatic and showed normal optic fundi

The symptoms which may occur in craniostenosis are due to raised intracranial pressure. They are headache and papilloedema, which may proceed to optic atrophy and blindness. There is no evidence that mental retardation is a result or that it benefits from treatment.

Treatment is by linear craniectomy. Symptoms or signs resulting from raised intracranial pressure constitute an absolute indication for operation. Deformity may be prevented if operation is performed in the early weeks or months of life.

PRE-ASTHMA by Dr. S. C. Shore, *Cape Town*

The incidence of asthma in the Cape was shown to be at least 7%, and of major allergic disease at least 14%.

A study of 200 cases of children who developed asthma before the age of 7 years showed that in only 22% did asthma strike without warning. In 78% of cases eczema, hay fever, vasomotor rhinitis, urticaria, or milk allergy, alone or in association with one another, foreshadowed the onset of asthma. Recurrent wheezing occurred so frequently in the histories of these children that it always demands investigation. Asthma followed on eczema in 74 cases out of 100 and followed nasal allergy in 80 cases out of 100. Boys with urticaria were more prone to develop asthma than girls.

The different manifestations of milk allergy were discussed, as was the role of infection and the emotions in activating and potentiating a latent or limited asthma. As regards heredity, 70% had a positive family history.

A plea was made for the full investigations and treatment of all allergic conditions for the reason that this was the best prophylaxis against asthma.

A DISEASE IN SEARCH OF A NAME by Dr. B. Senior, *Johannesburg*

A female child of 2 years and 10 months was seen recently because of 'a peculiar appearance since birth', and was noted to have a wrinkled wizened face and to lack subcutaneous fat. Despite eating well and gaining she did not appear to get any fatter. When 6 months old an abnormality of the genitalia was noted.

Family history: A previous pregnancy had resulted in the birth of an outwardly normal baby, stillborn following prolapse of the cord. There was a normal younger sibling. The parents were well and unrelated.

Physical examination revealed a child with a lipodystrophic face and large projecting ears. The facies was triangular and the chin pointed. The teeth were widely spaced and sharply pointed. There was a generalized yellowish-brown pigmentation of the skin, with a darker hue in the exposed areas, and a gross generalized loss of subcutaneous fat from the entire body. The musculature was well developed and almost hypertrophied, particularly over the scapular region and the legs. The veins of the extremities were very prominent. The abdomen was protuberant and a liver edge was felt 3 fingers below the costal margin. The clitoris was enlarged. The hands and feet were extremely large.

Among the investigations carried out a persistently low fasting blood sugar was found which responded normally to both glucagon and adrenalin. The liver function tests were abnormal. At laparotomy absence of mesenteric fat was noted and specimens of the liver and of the ovary were taken.

Histological examinations of the liver showed heavy glycogen deposits, foci of syncytial clumping of nuclei, and a round-cell infiltrate. The ovary showed many immature follicles and follicular cysts.

It was felt that the patient corresponded in major respects with a case described by Berardinelli (1954), J. Clin. Endocr., **14**, 193, under the title *An undiagnosed endocrinometabolic syndrome*, and to the case described by Fontan *et al.* under the title of *Hypertrophie musculaire généralisée à début précoce avec lipodystrophie faciale, hépatomégalie et hypertrophie clitoridienne chez une fille de* 11 *ans.* in the Arch. franç. Pédiat., 1956.

Reasons are given for considering that these patients correspond to the leprechaun syndrome described by Donohue and Uchida in 1954.

It is postulated that a major component of the syndrome is a particular type of disease of hepatic glycogen storage consequent on a defect of the branching or debranching enzyme.

AMOEBIC LIVER ABSCESS IN AFRICAN CHILDREN by Dr. Joan Scragg, *Durban*

The findings in 64 cases of amoebic liver abscess diagnosed during 6½ years in the Department of Paediatrics, King Edward VIII Hospital, Durban, were described. The importance of an acute awareness of the condition in childhood was stressed with a view to early diagnosis and a lowering of the attendent high mortality. This condition should be considered in children in the differential diagnosis of tender hepatomegaly, even in the abscence of antecedent or concomitant dysentery. The treatment is the same as that advised in adults, namely aspiration and emetine and/or chloroquine diphosphate. The place of surgical treatment in selected cases was discussed.

PATENT DUCTUS ARTERIOSUS IN INFANCY by Dr. J. L. Braudo, *Johannesburg*

A report on 20 cases under the age of 2 years, with special reference to pulmonary hypertension.

The series comprised 15 females and 5 males. Their ages ranged from 3 months to 24 months when first seen. The main symptoms were excessive sweating, failure to thrive, frequent respiratory infections, and rapid breathing; 6 cases were in congestive cardiac failure; only 1 patient presented with differential cyanosis; 5 patients had associated congenital anomalies; in 2 cases there was a family history of congenital heart disease. Two mothers had rubella in the first trimester of pregnancy.

Basal systolic murmurs were heard in every case. Classical Gibson murmurs were noted in 13 cases—in 3 the murmur became audible after digitalization had slowed the heart beat. Accentuation of the basal second sound—the pulmonary component—was noted in all cases. Apical mid-diastolic murmurs were recorded in 8 cases. Pulmonary systolic clicks were heard in 4 cases. The pulse was collapsing with an increased pulse pressure in 19 cases.

The heart was enlarged radiologically in 17 cases; increased pulmonary vascularity was shown in 18 and a prominent pulmonary artery segment in 17. An enlarged left atrium was seen in 17 cases. Prominence of the aorta is not a feature at this age.

The electrocardiogram showed combined ventricular hypertrophy in 12 cases—the left ventricle predominating. Isolated left ventricular hypertrophy was noted in 5 cases and isolated right ventricular hypertrophy in 2 cases.

Cardiac catheterization was carried out in 12 cases. In the remaining 8 cases the pressures were recorded directly at surgery. Equalization of aortic- and pulmonary-artery pressures were recorded in 9 cases, and the P.A. pressure was two-thirds the aortic pressure in 2 cases and one-half the aortic pressure in 4 cases. In the remainder the mean P.A. pressure was normal or only slightly elevated. In all the cases the pulmonary-artery pressures were estimated by cardiac catheterization or clinically 2 years later. In 2 cases (those with isolated right ventricular hypertrophy) the pressures are unchanged, despite ductal closure. In 2 further cases the pressure remained 50-60% of aortic pressure but in the remainder (16 cases) the pressures are normal. It has been necessary to recatheterize only 6 cases.

Lung biopsy (left lingula) was taken in every case. Medial hypertrophy was the only abnormality present in 5 cases. In all these patients the pulmonary-artery has remained very high or only decreased slightly since surgery.

It is therefore suggested that the presence of isolated right ventricular hypertrophy on the E.C.G. and medial hypertrophy in the lung biopsy might contra-indicate closure of the ductus. This series is also in keeping with the present consensus of opinion regarding the congenital nature of severe pulmonary hypertension in congenital heart disease.

TYPHOID ENDOTOXOID PRODUCTION AND COMPARISON OF AGGLUTININ AND PROTECTIVE ANTIBODY TITRES OF SERA*

J. H. MASON, *South African Institute for Medical Research, Johannesburg*

The early history of the immunization of man against typhoid fever with bacterial vaccines indicates that their use probably reduced the incidence of the disease. However, no definite conclusion on their real value can be reached because the trials were neither planned nor conducted in such a way as to satisfy modern statistical criteria.

In the cellophane-bag method of cultivating *Salmonella typhi* a concentration of 10^{11} bacteria per ml. is regularly obtained. The O and Vi agglutinogens and the protective antigen, assuming it to be different from the Vi antigen, are present in greater concentration in the culture supernatant than in the bacteria themselves, especially if the culture is heated at 65°C for 1 hour. The supernatant, incubated for 1 month in the presence of 0·3% formalin, is called 'endotoxoid' and, suitably diluted, is used in South Africa for the immunization of man. Its immunizing power is at least as good as that of a bacillary vaccine and it has the advantage of causing fewer and less severe reactions.

It has been stated that the Vi agglutinin content of a serum is closely correlated with its protective power. Results of assays were given showing that a serum with a high Vi titre (1 : 160 — 1 : 640) was highly protective but that there was not necessarily a correlation between these two measures of immunity because some sera without demonstrable Vi agglutinin were also highly protective. The evidence, at present incomplete, indicates that protective antibody and Vi agglutinin, although sometimes closely associated, are not necessarily the same.

* Summary of a talk given at a Staff Meeting of the Institute on 23 March 1959.

THE WORLD MEDICAL ASSOCIATION

The following announcements have been made:

Dr. Renaud Lemieux, of Quebec, Canada, has been elected by the Council of the WMA to fill the vacant position of President-Elect of the MWA for the remainder of the term 1958-59. The vacancy resulted from the untimely death of the incumbent, Dr. Leon Gerin Lajoie of Montreal, Canada. On confirmation of his election by the General Assembly of the WMA at Montreal in September 1959 Dr. Lemieux will be installed as President.

Dr. John H. Bishop, B.Sc., M.D., of Bellevue, Washington, has been appointed by the Council as Deputy Secretary General of the WMA. He served in the US Public Health Service, resigning in 1957 with the grade of Senior Surgeon (Lt. Colonel), and then took up private practice in Bellevue, Washington. As a member of the USPHS he had extensive service in Europe involving public health and clinical medicine and administration, and was in a liaison capacity with governmental and voluntary agencies in Europe, North Africa and the Middle East. Dr. Bishop is to take up his new duties as deputy to Dr. Louis H. Bauer about 1 May 1959.

UNIVERSITEITSNUUS : UNIVERSITY NEWS

UNIVERSITEIT VAN PRETORIA

By die promosieplegtigheid op 21 Maart 1959 is die volgende grade en medaljes toegeken:

Graad van Baccalaureus in Geneeskunde en Snykunde

Abbott, Thornton (met Lof in Radiologie)
Alberts, Francois Jacobus

Barnard, Boshoff
Barnard, Sarel Johannes
Boonzaaier, Adriaan Pieter
Botha, Louis Jacobus

Cooper, Michael
Cronje, David Pieter

de Lange, Johannes Hendrik Benjamin
du Plooy, Willem
du Toit, Anton Heyns

Fabricius, Beate Franzis Augusta
Faure, Albert Jacobus

Gaigher, Rupert
Greyling, Jacobus Arnoldus

Hefer, Adam Gottlieb
Holmberg, Daniel Johannes Rademan
Hough, Isabella Pistorius

Kleynhans, Gertruida Anna Magdalena Maria
Kleynhans, Thomas Lourens

Louw, Jan Cornelius

Marais, Jean
Meyer, Jacobus Daniel

Pieterse, Christoffel Petrus
Pistorius, Gabriël Jacobes (met Lof in Radiologie; L. J. te Groen-medalje vir Obstetrie en Ginekologie; Protea Holdings-Prys vir Interne Geneeskunde)
Potgieter, Matthys Gerhardus
Preller, Abraham Christoffel Naudé

Reyneke, Jan Harm Thomas

Solomon, David Herman
Stead, Arthur Wilmore (met Lof in Radiologie; Protea Holdings-Prys vir Radiologie)
Strauss, Peter Johannes
Swart, Petrus Daniel

Terblanche, Hendrik Lukas

van der Sande, Frederik Johannes
van Graan, Nico Jacobus
van Niekerk, Frederik Jacobus
van Rooyen, Willem Frederik
van Zyl, Jacobus Johannes
Venter, Coert Petrus (met Lof in Chirurgie)
Verster, Francois
Verster, Jacobus Pieter

Weideman, Maria Margaretha

Zittlau, Erwin Wolfgang

Graad van Magister in Geneeskunde

Beyers, Jan Andries (Radiologie)
Botha, Carel Lodewicus (Radiologie)
de la Harpe, Moolman Meyer (Obstetrie en Ginekologie)

Naudé, Petrus Johan Wichardt (Chirurgie)
Retief, Francois Johannes Petrus (Kindergeneeskunde)

van Niekerk, Pieter van der Byl Smuts (Oogheelkunde)
Venter, Izak Johannes (Dermatologie)

Graad van Dokter in Geneeskunde

de Muelenaere, Gustave Paul Maximilien Conrad

Wicht, Christiaan Ludwig

Tweejarige Diploma in Volksgesondheid

le Roux, Nicolaas Jacobus
Raymond, Eugène Cremonx

Schulz, Eleonora Joy
Spangenberg, Benjamin (met Lof)

OFFICIAL ANNOUNCEMENT : AMPTELIKE AANKONDIGING

MEDICAL AID SOCIETIES

The following new medical aid societies were approved by Federal Council at its meeting held in Johannesburg on 8-10 April 1959. This approval takes effect on 1 May 1959.

1. Boart & Hard Metal Products Medical Aid Society, P.O. Box 9325, Johannesburg.
2. Dorman Long (P.E.) Medical Aid Society, P.O. Box 9010, Port Elizabeth.
3. Escom (N.S.U.) Medical Aid Society, P.O. Box 2408, Durban.

A complete list of approved medical aid societies will be published in the next issue of the *Journal*.

L. M. Marchand
Associate Secretary

Medical House
Cape Town
15 April 1959

MEDIESE HULPVERENIGINGS

Op sy vergadering van 8-10 April 1959 te Johannesburg gehou, het die Federale Raad onderstaande nuwe mediese hulpverenigings goedgekeur. Hierdie goedkeuring tree in werking op 1 Mei 1959.

1. Boart & Hard Metal Products Medical Aid Society, Posbus 9325, Johannesburg.
2. Dorman Long (P.E.) Medical Aid Society, Posbus 9010, Port Elizabeth.
3. Escom (N.S.U.) Medical Aid Society, Posbus 2408, Durban.

'n Volledige lys van goedgekeurde mediese hulpverenigings sal in die volgende uitgawe van die *Tydskrif* verskyn.

L. M. Marchand
Medesekretaris

Mediese Huis
Kaapstad
15 April 1959

PASSING EVENTS : IN DIE VERBYGAAN

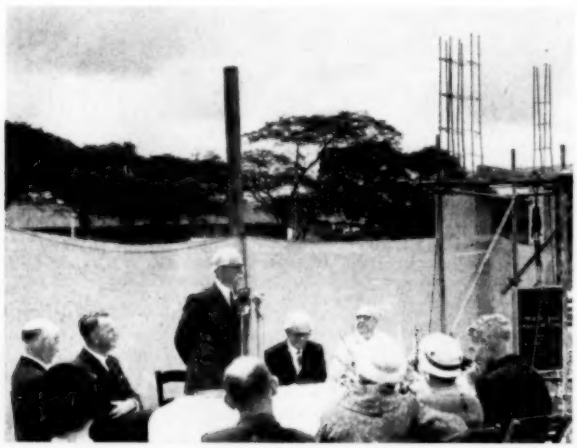
Mr. Sidney Sacks, orthopaedic surgeon, of Medical Centre, Johannesburg, has changed his address to Clarendon Centre, off Clarendon Circle, Johannesburg. Telephone: 44-4378.

* * *

Mr. Joseph Lannon, F.R.C.S. (Eng.), of Johannesburg, is now consulting in new premises at the Lady Dudley Nursing Home (6th floor). Telephone: 44-5249.

* * *

The Institute for Parasitology in Durban. The twin foundation stones of the Institute for Parasitology in Durban were laid by the Chancellor of the University of Natal, the Honourable D. G. Shepstone, and by Dr. S. M. Naudé, the President of the South African Council for Scientific and Industrial Research. This



building will primarily house the Amoebiasis Research Unit of the CSIR and will form a possible nucleus of the School of Tropical Medicine of the University. The Amoebiasis Research Unit has been brought into being largely through the hard work and enthusiasm of Dr. R. Elsdon-Dew.

At the table, from left to right: Dr. E. G. Malherbe, Principal of the University; Dr. S. M. Naudé; the Hon. D. G. Shepstone; Dr. R. Elsdon-Dew; and Dr. G. G. Campbell, the President of the Council of the University of Natal. (Photo—*The Natal Mercury*)

* * *

Research Forum, University of Cape Town. A meeting of Research Forum will be held on Tuesday 5 May at 12 noon in the large A-floor lecture theatre, Groote Schuur Hospital, Observatory, Cape. Dr. A. van Zyl will speak on 'Thyroid function in relation to bile lipids and bile salts. An experimental approach using bile duct cannulated rats'. All interested are invited to attend this meeting.

* * *

Cape Midland Branch (M.A.S.A.). The following meetings are to be held at Port Elizabeth by this Branch:

Friday 1 May—'Atmospheric pollution', a discussion with the Chemical Institute, St. John's Gate, Rink Street, at 8 p.m.

Thursday 7 May—Dr. M. Kahn will speak on his travels in Switzerland and the USA, at the Nurses' Home at 8.15 p.m.

Tuesday 19 May—Prof. R. B. Kerr, Sims Travelling Fellow and Professor of Medicine, University of British Columbia, will speak on 'Acute renal failure' at the Nurses' Home, at 8.15 p.m.

* * *

Dr. C. F. Krige, M.A., M.B., F.R.C.S. (Edin.), F.R.C.O.G. en *dr. P. Boorsma*, M.B., Ch.B. (Kaapstad), M.D. (Groningen), praktiseer nou in vennootskap as spesialiste in ginekologie en verloskunde te Listergebou 103, Jeppestraat, Johannesburg. Telefone: Spreekkamer 22-4819, wonings dr. Krige 42-1836, dr. Boorsma 46-1543; indien geen antwoord 22-4191.

Dr. C. F. Krige, M.A., M.B., F.R.C.S. (Edin.), F.R.C.O.G. and *Dr. P. Boorsma*, M.B., Ch.B. (Cape Town), M.D. (Groningen), are now practising in partnership as specialists in gynaecology and obstetrics at 103 Lister Buildings, Jeppe Street, Johannesburg. Telephones: Rooms 22-4819, residences Dr. Krige 42-1836, Dr. Boorsma 46-1543; if no reply 22-4191.

* * *

The Southern African Cardiac Society (Cape Province Section). A scientific meeting of the Cape Province section of this Society was held at Groote Schuur Hospital, Observatory, Cape, on Thursday evening, 19 March 1959. Dr. Paul D. White, Senior Consultant Cardiologist to the Massachusetts General Hospital, Boston, USA, attended the meeting. The programme was as follows:

1. Dr. Paul White showed a film of aortic stenosis and its surgical repair. He discussed the pathological anatomy.
2. Dr. C. Barnard showed a film of the aortic valves and an attempt at repair made at the Minneapolis Surgical Centre in Minnesota.
3. Dr. A. Swanepoel showed a case of constrictive pericarditis in a boy aged 7, who had been catheterized. The differential diagnosis between myocarditis, endocarditis and pericarditis was fully discussed.
4. Dr. M. Nellen, showed a case of a boy of 17, who had had an attack of coronary ischaemia at the age of 14. The possibility of an abberrant left coronary artery arising from the pulmonary artery was discussed. It is intended to perform angiocardiography to establish the origin of the abnormal coronary vessel.

Surgical transplantation of the abberrant artery, if it exists, was held to be feasible.

5. Dr. M. Nellen, showed slides of phonocardiographs before and after open heart surgery in atrial and ventricular septal defects and left atrial myzoma.

6. Dr. L. Vogelpoel discussed the murmurs before and after open heart surgery in the tetralogy of Fallot. The usefulness of amyl nitrite to determine whether the post-operative murmur is due to persistent abnormality of the outflow tract or incomplete closure of the septal defect was shown.

7. It was announced that the 3rd European Congress of Cardiology will take place in Rome from 18 to 25 September 1960.

BOOKS RECEIVED : BOEKE ONTVANG

Poliomyelitis. Papers and Discussions Presented at the Fourth International Poliomyelitis Conference. Compiled and edited for the International Poliomyelitis Congress. Pp. xviii+684. 422 figures. 60s. net. Philadelphia and Montreal: J. B. Lippincott Company. Supplied in South Africa by Pitman Medical Publishing Co. Ltd., London. 1959.

Lectures on Epilepsy. Edited by A. M. Lorentz de Haas. Pp. viii+172. 24s. Amsterdam—London—New York—Princeton: Elsevier Publishing Company. 1958.

The History and Philosophy of the Brain and its Functions. Edited by F. N. L. Poynter, Ph.D., F.L.A. Pp. xi+272. 12 figures. 22s. 6d. Oxford: Blackwell Scientific Publications. 1958.

Psychiatry and the Public Health. University of London Heath Clark Lectures 1957 delivered at the London School of Hygiene and Tropical Medicine. By G. R. Hargreaves. Pp. 118. 18s. London—New York—Toronto: Oxford University Press. 1958.

A Clinical Introduction to Heart Disease. By Crighton Bramwell, M.A., M.D., F.R.C.P. Pp. 229. 61 figures. 21s. London—New York—Toronto: Oxford University Press. 1959.

Studies on Fertility. Including papers read at the Conference of the Society for the Study of Fertility, London, 1958. Being Volume X of the Proceedings of the Society. Edited by R. G. Harrison, M.A., D.M. Pp. x+176. Illustrations. 25s. Oxford: Blackwell Scientific Publications. 1958.

Gynecologic Radiography. By Jean Dalsache, M.D. and J. Garcia-Calderón, M.D. With a chapter on *Radiography of the Breast.* By Charles-M. Gros, M.D. and Robert Sigrist, M.D. Pp. xvii+188. 305 illustrations. $8.00. New York: Paul B. Hoeber, Inc. 1959.

Treatment of Cancer and Allied Diseases. 2nd edition. Volume 2. *Tumors of the Nervous System.* By 30 authors, edited by Georg T. Pack, M.D., F.A.C.S. and Irving M. Ariel, M.D., F.A.C.S. Pp. xvii+316. 340 illustrations. $15.00. New York: Paul B. Hoeber, Inc. 1959.

A History of Neurology. By Walther Riese, M.D. Pp. 223. $4.00. New York: MD Publications, Inc. 1959.

IN MEMORIAM

DONALD DOUGLAS PALMER, M.B., CH.B. (CAPE TOWN)

Dr. A. M. Smith, of Johannesburg, writes: Dr. Douglas Palmer passed away in Johannesburg on Thursday 26 March 1959 at the age of 38 years.

Born in Johannesburg and matriculating at Hilton College after a preparatory education at Jeppe School he spent a few years at Guy's Hospital, London, before completing his medical studies at the University of Cape Town.

Dr. Douglas Palmer

Those of us privileged to know Doug in those days at the Cape, or in later years after he had taken over his father's busy practice in Johannesburg, will never forget his unbounded enthusiasm for living, his quite exceptional energy and his deep understanding of the needs of his family, friends and patients.

His willingness to help anyone at any time, his love of all things sporting, and his unique ability to say more in a given period than any of his friends or colleagues, endeared him to all and ensured for him a place in our hearts forever.

The very large attendance at his funeral service, representative of the medical and nursing professions, his patients and his friends, bears testimony, if any were needed, to his universal popularity.

Although in his short span he got so much out of life, he yet had so much more still to give that his tragic passing has left us all completely unreconciled.

To Heather and their children, Gaye and David, and other members of his family, we extend our deepest sympathy.

NEW PREPARATIONS AND APPLIANCES: NUWE PREPARATE EN TOESTELLE

KENACORT-A OINTMENT: KENACORT-A LOTION WITH GRANEODIN

A potent new corticosteroid for topical dermatological use, developed at the Squibb Institute for Medical Research, has been announced by the Squibb International Division of Olin Mathieson Chemical Corporation, who supply the following information:

The new preparation, a synthetic known as triamcinolone acetonide, will be made in ointment and lotion form. It will be marketed under the trade names, Kenacort-A Ointment and Kenacort-A Lotion with Graneodin.

The ointment is presented in oleaginous 'plastibase' containing liquid petrolatum and poly-ethylene. In addition to its corticosteroid content, the lotion includes Graneodin, a mixture of the antibiotics neomycin and gramicidin, for the treatment and prevention of many superficial bacterial infections of the skin.

Chemically, Kenacort-A is: 9-alpha-fluoro-16-alpha, 17-alpha-(dimethyl-methylenedioxy)-1, 4-pregnediene-3, 20-dione.

Kenacort-A has marked anti-inflammatory, antipruritic and anti-allergic properties. Reports indicate that it rapidly relieves the itching and burning of inflammatory skin lesions. No oedema or sodium retention has been observed in any of the cases studied even when Kenacort-A was applied over extensive denuded surfaces.

Reports of clinical trials of Kenacort-A in over 2,000 patients with a broad range of dermatoses, by almost 100 investigators, showed good to excellent results in a high percentage of cases treated. Numerous double-blind studies were included. Studies included both private and hospital patients.

Range of activity. Kenacort-A Ointment and Kenacort-A Lotion with Graneodin are indicated in atopic dermatitis, contact dermatitis, eczematous dermatitis, infectious eczemoid dermatitis, neuro-dermatitis, insect bites, pruritus ani and vulvae, lichen simplex chronicus and nummular eczema.

Dr. L. B. Hobson, medical director of the Squibb Institute for Medical Research, stated that, in addition, both preparations have been successfully used in a wide variety of other dermatoses. These include conditions due to infectious agents, acne, other forms of eczema, erythemas and skin manifestations of vascular disturbances. Psoriasis patients, in several instances, showed definite improvement with the new preparation, he stated, and investigators' reports indicated its usefulness in folliculitis, pigmentary disturbances, some bullous skin diseases, and several dermatologic conditions due to collagen diseases. Additional cases showing favourable responses included eruptions in the genital and perianal regions and miscellaneous skin diseases. Several cases showing improvement in long-standing dermatological conditions resistant to previous forms of therapy were

included in the reports. Kenacort-A Lotion produced excellent results in a case of eczema of the hands, after repeated failures of other medications. Treatment of a case of psoriasis was reported by the investigator as 'excellent; best results seen in this patient in 5 years'.

Absence of toxicity. One study comparing triamcinolone acetonide with hydrocortisone applied in symmetrically paired areas showed that Kenacort-A 'exhibited superior anti-inflammatory activity, compared with hydrocortisone in almost two-thirds (64%) of the 50 patients treated, the advantage being most clearly evident in chronic skin conditions which were resistant to previous forms of therapy'. Additional studies (several double-blind) indicated a decided patient preference for Kenacort-A over hydrocortisone.

No adverse effects, such as sodium retention and oedema, have been observed even in patients given massive topical doses of Kenacort-A. Sensitivity was not reported although a few cases of local irritation, such as stinging and burning, were noted.

Forms. Kenacort-A is supplied as: (1) Kenacort-A Ointment—Squibb triamcinolone acetonide 0·1% in 'plastibase' 5 g. tubes, and (2) Kenacort-A Lotion with Graneodin, containing per c.c. 0·1% triamcinolone acetonide, with neomycin sulphate equivalent to 2·5 mg. of neomycin base and 0·25 mg. of gramicidin in a 15 c.c. plastic squeeze bottle.

Technical literature and supplies for clinical evaluation are obtainable from Squibb Laboratories (Pty.) Ltd., Pharmacy House, 80 Jorrissen Street, Braamfontein, Johannesburg.

NUWE APPARAAT VIR ELEKTRIESE BEHANDELING VAN HARTVERSAKING

Twee eenhede, naamlik die Defibrillator en Heartpacer word aan die mediese professie aangebied deur Medical Distributors (Eiens.) Bpk. van Johannesburg. Albei hierdie apparate is vervaardig deur die welbekende Birtcher Korporasie van Los Angeles, Kalifornië, en word gebruik in talle van die groter sentra in the V.S.A. sedert 1950.

Die Defibrillator en Heartpacer is essensieel vir noodtoestande in enige operasiesaal. Chirurge en geneeshere dwarsdeur die wêreld het bewus geword van die waarde van elektriese apparate vir behandeling in gevalle van hartversaking, en daar het 'n merkbare vermindering gekom in die aantal sterfgevalle as gevolg van die gebruik van hierdie nuwe apparate.

Die Defibrillator word direk op die hartkamers gebruik deur 'n snit in die borswand. Die funksie van die apparaat is om die hartkloppings te koördineer wanneer trilling plaasvind. By die ontwerp van hierdie apparaat was veiligheid van die pasiënt 'n belangrike oorweging, en 'n outomatiese stroombreker is aangebring waardeur verhoed word dat die hartspiere beskadig word deur 'n elektriese brand indien te veel stroom deurdring.

Die Heartpacer word gebruik as 'n elektriese prikkel wat van buite af aangewend word wanneer die hart stadig of onreëlmatig klop. Elektrodes word op die borswand geplaas en die masjien word in werking gestel. Die Heartpacer kan onmiddellik gebruik word wanneer die hart ophou om te klop, met dien verstande dat daar geen ventrikulêre trilling is nie. Nadat ventrikulêre trilling met die Defibrillator behandel is (indien nodig) kan die Heartpacer etlike ure, dae of selfs maande lank toegepas word totdat die normale hartklop terugkeer.

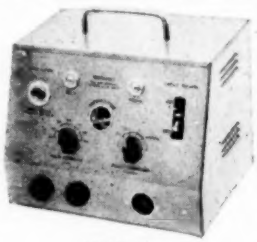
Wetenskaplike literatuur en verdere informasie oor hierdie moderne apparate is verkrygbaar by die Uniale Verspreiders: Medical Distributors (Eiens.) Bpk., Posbus 3378, Johannesburg.

APPARATUS FOR THE ELECTRICAL TREATMENT OF CARDIAC FAILURE

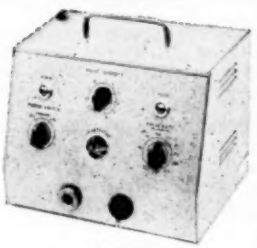
Two units, the Defibrillator and Heartpacer, are presented to the medical profession of Southern Africa by Medical Distributors (Pty.) Ltd., of Johannesburg. This apparatus has been developed by the well-known Birtcher Corporation of Los Angeles, California, and has been in use at many of the larger centres in the USA since 1950.

The Defibrillator and Heartpacer are essential stand-by items in any operating theatre. Surgeons and physicians throughout the world have become familiar with the use and value of electrical apparatus for the treatment of cardiac failure and there has been an appreciable decrease in the death rate as the result of the use of these modern appliances.

The Defibrillator is used directly on the ventricles through an incision in the chest wall. Its function is to coordinate the human heart beat when fibrillation has occurred. Safety of the patient has been the guiding factor in the design of this apparatus, which is fitted with an automatic circuit breaker, so as to prevent electrical burning of the heart muscle, which might result from excessive amperage or voltage.



Defibrillator



Heartpacer

The Heartpacer is an electric stimulator which is used externally to restore the heart beat when it is slow or faltering. Electrodes are placed on the chest wall and the machine put into operation. The Heartpacer may be used immediately the heart fails, provided there is no ventricular fibrillation, or after this has been arrested by the Defibrillator, and may be maintained for many hours, days or even months, until the normal beat recurs.

Scientific literature and further information about both these units may be obtained from the sole agents: Medical Distributors (Pty.) Ltd., P.O. Box 3378, Johannesburg.

BOOK REVIEWS : BOEKBESPREKINGS

THE RESPIRATORY MUSCLES

The Respiratory Muscles and the Mechanics of Breathing. By E. J. Moran Campbell, M.D. (Lond.), M.R.C.P. (Lond.). Pp. xvi+131. 32 figures. 20s. net. London: Lloyd-Luke (Medical Books) Ltd. 1958.

A great deal has been written about broncho-pulmonary function tests, but very little work has been published on the mechanics of breathing. The only comprehensive studies on the subject are those of Beare and Maissal (1842, 1843) and Duchesne (1867).

A complete description of muscle function requires two sets of data. The first is gleaned from the conventional methods of anatomical examination and the response to electrical stimulation, the second by a more complex recording system such as electromyography. Electromyography is the most valuable method of studying the activities of the muscles of breathing.

In this book separate chapters are devoted to each group of muscles concerned with the breathing mechanism, i.e. the diaphragm, the intercostals, the abdominal muscles, the scalene and sternomastoids. This is followed by a general summary of the behaviour of the respiratory muscles during different phases of respiration.

There is a long discussion on the balance between the inspiratory and expiratory muscle groups. Available evidence suggests that maximum inspiratory and expiratory efforts are limited by reflex mechanisms which probably arise from visceral structures.

A chapter describes the work of breathing and the energy consumed, the ratio of these being a measure of the efficiency of the respiratory muscles.

This short book is concluded by an appendix describing the apparatus, the technique, and the experimental procedure of electromyography. A comprehensive bibliography follows. The work will prove of value to all those interested in pulmonary

function tests, for it tackles the problem from the comparatively unexplored angle of the behaviour of the respiratory muscles.

W.L.P.

CONNECTIVE TISSUE

Connective Tissue. A symposium organized by the Council for International Organizations of Medical Sciences. Edited under the direction of R. E. Tunbridge, Madeline Keech, J. F. Delafresnaye and G. C. Wood. Pp. xii+371. Illustrations. £2 2s. 0d. Oxford: Blackwell Scientific Publications. 1957.

As a means of furthering medical knowledge the symposium has become increasingly popular. Critical discussion of the work presented and the views propounded is often a stimulus not only to the participant but also to the reader. The participants at this symposium included experts from Denmark, England, France, Germany, Hungary, Sweden, Switzerland, the USSR, the Union of South Africa and the USA.

The purpose of this symposium was the presentation of recent work and views on the connective tissue, and through discussion to arrive at some integration of current thinking. The connective tissue has not received the attention it deserves. To most of us it is a rather mysterious, ill-understood system comprising cells, ground substance and fibres; and the unravelling of its secrets has taxed the technical ingenuity of the investigator. This symposium is rewarding in bringing many of the problems of function and structure into focus.

It is impossible to review critically the individual contributions. Unfortunately there appeared to be little agreement on the nomenclature of the different collagen preparations. The papers were of a high order of merit. To mention a few: Jackson's suggested scheme of fibrogenesis illustrates many of the complex interrelationships between 'citrate-soluble collagen', 'neutral-salt-soluble collagen' and 'insoluble collagen'. Gillman rightly pointed out that Jackson's work had been carried out with the carragenin granuloma—a different phenomenon from the fibrosis encountered in scar formation. Robb Smith summarized his work on reticulin, which is to be looked upon as a member of the collagen family of fibres and not a precursor of collagen, and should be distinguished from the argyrophyll collagen fibres seen in embryonic tissue and in areas of repair. Of very great interest were the pseudo-elastic fibres described by Gillman's group. They are also to be distinguished from reticulin. Other topics of considerable interest were the demonstration by Fitton Jackson of the possible formation of intracellular fibre. The work of Grassman on the chemistry of collagen and the amino-acid sequences was outstanding.

The significance of polysacharide moieties and certain protein factors are still to be elucidated, and running through the symposium was the constant awareness of the limitations of technique, particularly in obtaining pure extracts. In this connection Neuburger's work on the presence of the serum-protein fractions in tissue samples is of considerable importance.

The interested worker will find much of fundamental importance in understanding the complexities of the structure, composition and function of collagenous and allied fibres. Although the path has been beset with many difficulties, the growth of knowledge in this field has been considerable and it is to be hoped that in time disagreements regarding nomenclature of different collagen proportions will be overcome.

L.E.

RECENT STUDIES IN EPIDEMIOLOGY

Recent Studies in Epidemiology. Edited by J. Pemberton, M.D., M.R.C.P., D.P.H. and H. Willard, M.D. Pp. xiii+203. Illustrations. 25s. net. Oxford: Blackwell Scientific Publications. 1958.

This book is a collection of papers read at the study group organized by the International Corresponding Club at Noordwyk aan Zee, Holland, during 1957, which illustrate, each and severally, the applicability of the epidemiological method of approach to the elucidation of many of the problems of ill health which, up to now, have been taken for granted.

It has always been accepted as a truism that the health policy of any country or locality cannot be properly planned unless the planning is backed by research into the manner and causation of the many forms of ill-health of which up to the present the cause or commencement has not been made clear. These papers, in no small way, open the horizons of thought so that many of those ill-defined and vague forms of ill-health may well, by the employment of the epidemiological method, be placed on such a foundation that preventive or promotive remedies can be applied.

It is virtually impossible to review satisfactorily a collection of papers of the type presented here, but all have their different and separate lesson to impart and can be considered as sign posts to other and similar forms of research. Certain of the papers are especially interesting, such as those on the relationship between nasal malignancy and the occupation of nickle refiners, or that by Dr. Alice Stewart on the association between children dying of malignancy and their greater exposure to the effects of X-rays; and it is most stimulating to note the interest evoked by this method of research by the general practitioner.

All, no doubt, are aware of the classical epidemiological studies in a rural practice of Dr. Wm. Pickles of Aysgarth, Yorkshire—who incidentally contributes a paper to this collection—but it is of more than general interest to note the entry into this very important field of other general practitioners. In this regard Dr. Logan's paper on the epidemiological investigations into all forms of ill health of patients attending a busy group practice is most interesting and possibly far reaching in its implications.

These papers should be closely and separately studied by all who are interested in medicine as a whole. They bear just as many messages for the clinicians—including the general practitioners—as for public-health workers. I have no hesitation in strongly recommending them to all my medical and lay colleagues.

E.D.C.

CORRESPONDENCE : BRIEWERUBRIEK

EDINBURGH GRADUATES

To the Editor: In 1886 there were 70 South African medical students in Edinburgh—far more than were then studying elsewhere overseas. In about 1893 a South African Union was formed and a club house established in George Square, Edinburgh, as 'a protection against temptation and to minimize the risk of the inexperienced Colonial being led astray' (at least, that is the way the fund-raising brochure put it to the people at home). For a generation or more this club house was a home-from-home for South Africans in the Scottish capital; it was flourishing in 1907 when General Louis Botha was entertained there, and it died a very slow death. What finally killed it was the First World War and the establishment of medical schools in South Africa at that time. Its affairs were wound up in 1935, and the assets used for establishing a bursary in South Africa.

Some of the Union's first officials and members are still with us. There must be many South African doctors who visited that club house and enjoyed its amenities. I have been asked to piece together an article 'The South Africans in Edinburgh', and I would be grateful to any old Edinburgh graduate who is prepared to write and tell me about it.

Edmund H. Burrows

c/o Barclays Bank DCO
Cockspur Street
London, S.W.1.
6 April 1959

ANTIBIOTIC TREATMENT OF OTITIS MEDIA

To the Editor: Much has been written about the ever-increasing incidence of complications associated with antibiotic therapy. Allow me to comment through the medium of this *Journal* on a clinical picture resulting apparently from the use of antibiotics in certain cases of otitis media.

A few days after the acute episode has been combated with an antibiotic, the patient presents with distortion of hearing, varying degrees of deafness, and a dull sensation over the affected side of the head. Examination shows a retracted, dull tympanic membrane. Bone conduction is increased.

Apparently the symptoms are produced by the accumulation in the middle ear of a viscous secretion, rendered sterile by the antibiotic and failing to drain effectively. Subsequent treatment is not always satisfactory. Drainage through the Eustachian tubes with the aid of nasal decongestants is slow and often unsuccessful. Attempts at parecentesis are often disappointing. Where conservative drainage has been instituted by the use of decongestants, I have on two occasions administered Varidase buccal tablets in an attempt to liquefy the secretions—with apparent success. On one occasion, where paracentesis was performed by an ear, nose and throat surgeon, Varidase was also used, apparently successfully, as an aid in liquefying the gelatinous secretion and thus facilitating its drainage.

As a general practitioner, in whose domain the initial treatment of otitis media usually falls, I should welcome further comment on the prevention of this unfortunate complication. What is the antibiotic of choice? For how long should it be administered? What adjuvant therapy should be instituted?

Maurice Silbert

7 Mimosa Arcade
Sea Point, Cape
4 April 1959

DISTRIKSGENEESHEERSKAPPE

Aan die Redakteur: Na aanleiding van die brief in u geëerde *Tydskryf* deur *Never Again*[1] en u naskrif, die volgende:

Die totale bedrag wat deur distriksgeneeshere bygedra is tot die fonds beloop nou £500. Die verskil tussen die bedrag deur u genoem is by 'n later geleentheid aangesuiwer.

Dat daar wel baie leemtes in die diens bestaan, is waar. Dit is egter nie reg dat die hele skuld net op die skouers van die departement van Volksgesondheid gegooi word nie.

As gevolg van vertoë gerig deur die bestuur van die Vereniging van Distriksgeneeshere is die Departement van Volksgesondheid wel deeglik bereid om salarisse en toelaes te vermeerder waar distriksgeneeshere hulle eise met statistiek rugsteun. Ongelukkig gaan baie vertoë wat wel deeglik 'n vermeerdering in vergoeding regverdig mank aan 'n gebrek aan statistiese stawing.

Ek kan net meld dat vanjaar, saam met die rekening vir lidmaatskapgelde, 'n rondvraag gegaan het om meer feite waarop die bestuur van die Vereniging van Distriksgeneeshere verdere vertoë wat hangende is, kan regverdig. Die reaksie hierop was swak. 'n Groot persentasie distriksgeneeshere is nie tevrede met werksomstandighede nie, maar hulle is òf te besig òf te 'traak-my-nie-agtig' om 'n kort samevatting van feite te gee oor wat nie reg is nie, en praktiese wenke te formuleer om verbetering in hulle spesifieke geval aan te beveel.

Ten slotte het ons nie reg om te kla net omdat kla, kla is nie. As ons kla moet ons klagtes op feite berus. As ons vertoë maak moet ons vertoë deur statistiek geregverdig wees sodat ons geen 'Nee' vir 'n antwoord aanvaar nie.

Mag ek die hoop uitspreek dat as gevolg van hierdie skrywe alle distriksgeneeshere hulle plig teenoor hulleself en die Vereniging van Distriksgeneeshere sal nakom en hulle rondvraag volledig en gemotiveerd terugstuur, sodat hulle ons kan help om hulle self te help.

Chris Troskie
Ere-Sekretaris
Vereniging van Distriksgeneeshere

Döngesstraat 18
Kroonstad
7 April 1959

1. Briewerubriek (1959): S. Afr. T. Geneesk., 33, 264.

OPEN PANEL OR CLOSED PANEL

To the Editor: I feel that one cannot let the remarks in Dr. Adderley's address[1] published in the *Journal* on 28 March go without criticism.

Although the closed-panel doctors are evidently perfectly happy I, as a 'non-closed panel doctor' am tired of doing the night calls and week-end calls for panel-doctors who do not answer their telephones at these times. I get an average of about 3 such calls per month and, needless to say, not a penny is paid for them. The trouble is that it is only discovered at the time of the call that one is dealing with another of these wretched panel-calls. I am convinced that without the support of the purely private doctors in the areas served by the panels the mortality rate would be much higher.

The most significant part of Dr. Adderley's address is that part near the end in which he states that in spite of continued blackballing there has never been any difficulty in filling the posts of these closed panels. Surely the time is nigh when the will of the Association should be forced on doctors who, despite the overwhelming opinion of the profession, as represented by the Medical Association, still carry on with seeing 60 or so patients in a morning's surgery.

I sincerely hope that the medical aid societies are not going to get the idea that the opinions expressed in Dr. Adderley's article reflect the views of serious-minded and conscientious doctors in this country.

Let us therefore go all-out to have free choice of doctor, so that we may establish decent doctor-patient relationships; which is a fundamental principle in medical practice.

Medicus nobilissimus atque optimus quaeritur

30 March 1959

1. Adderley, E. S. (1959): S. Afr. Med. J., 33, 279.

OPEN PANEL OR CLOSED PANEL

To the Editor: It was with great interest that I read the comments of Dr. E. S. Adderley,[1] retiring President of the Vaal River Branch of your Association, published in the *Journal* of 28 March 1959.

I recently retired from the Council of the Northern Association of Medical Aid Societies, on which body I acted as Chairman for many years, and was privileged to act as Chairman of the Advisory Council of Medical Aid Societies on the occasion of its meetings during recent years. As such, I attended many joint meetings with representatives of your Association.

Dr. Adderley, in his article, deals with both medical aid societies and benefit societies and the comments I make relate to medical aid societies only.

For many years the Advisory Council has pointed out to your Association that societies must reserve the right to administer their affairs without interference and it was a pleasure to read that at least Dr. Adderley appreciates that societies have this right but are being frustrated by continued attempts by your Association to impose artificial and unrealistic restrictions and limitations upon them.

I have in mind particularly the present revived agitation to stipulate that members earning over £2,500 (inclusive) per annum should pay private fees. This is particularly invidious when one realizes that, of the movement represented by the Advisory Council, less than 1% of the members of societies earn over £2,500 per annum and more than 75% earn below £600 per annum. This last group would not pay any fees as private patients.

Dr. Adderley's reference to the charging, in private practice, of similar fees to both the higher and lower income groups may apply in the Vaal River area, but my experience over many years indicates that this practice does not apply in general.

Over many years, the Advisory Council has never turned down any requests for reasonable increases in the tariff, even though these have led to frequent increases in rates of subscription and of employer subsidies, and has honoured all agreements with your Association.

Today, however, the medical aid movement, as we have long known it in South Africa, stands at the crossroads. The continued inroads into societies' rights to administer their own affairs, new demands for increased fees, and lack of support in numerous aspects are driving employers and employees to give consideration to participating in the insurance schemes which have developed in the last few years, with the completely ignorant belief in the statement that these insurance schemes are better able to withstand any financial strain. An intimate knowledge of administration costs and the proved pattern of sickness incidence and costs both here and overseas, related to subscriptions paid by members, forces me to challenge any such statement. This applies not only to new groups, but also to old established societies.

It is therefore my considered opinion that this drift toward medical insurance, and the consequent breakdown of medical aid, as we have known it, is the forerunner of a national health scheme, and I view such a development with the greatest concern.

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9 April 1959

1. Adderley, E.S. (1959): S. Afr. Med. J., 33, 279.